

MDX-400/400RDS

SERVICE MANUAL



US Model
Canadian Model
E Model
MDX-400

AEP Model
UK Model
MDX-400RDS

Photo : MDX-400RDS

Model Name	Using Similar Mechanism	NEW
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SPECIFICATIONS

MiniDisc section

Signal-to-noise ratio 90 dB
Frequency response 20 - 20,000 Hz
Wow and flutter Below

Tuner section

FM

Tuning range FM tuning interval:
MDX-400 :
50 kHz/200 kHz switchable
87.5 - 108.0 MHz (at 50 kHz
step)
87.5 - 107.9 MHz (at 200 kHz
step)
MDX-400RDS : 87.5 - 108.0 MHz
External antenna connector

Antenna terminal

Intermediate frequency

10.7 MHz
8 dBf
Selectivity 75 dB at 400 kHz
Signal-to-noise ratio 65 dB (stereo), 70 dB (mono)
Harmonic distortion at 1 kHz

0.5% (stereo), 0.3% (mono)

Separation 35 dB

Frequency response 30 - 15,000 Hz

AM

Tuning range AM tuning interval:
MDX-400 :
9 kHz/10 kHz switchable
531 - 1,602 kHz (at 9 kHz
step)
530 - 1,710 kHz (at 10 kHz
step)
MDX-400RDS :
MW : 531 - 1,602 kHz
LW : 153 - 281 kHz (AEP model)
SW : 5,950 - 6,205 kHz
(German model)

Antenna terminal External antenna connector
Intermediate frequency 10.71 MHz/450 kHz
Sensitivity MDX-400 : 30 μ V
MDX-400RDS : MW : 30 μ V
LW : 50 μ V (AEP model)
SW : 50 μ V (German model)

General

Tone controls Bass \pm 8 dB at 100 Hz
Treble \pm 8 dB at 10 kHz
Power requirements 12 V DC car battery (negative
ground)

Indash unit

Dimensions Approx. 178 x 50 x 180 mm
(w/h/d)
not incl. projecting parts and
controls

Mounting dimensions Approx. 178 x 50 x 160 mm
(w/h/d)
not incl. projecting parts and
controls

Mass Approx. 1.3 kg

Tuner/Preamp unit

Dimensions Approx. 196 x 25 x 140 mm
(w/h/d)
not incl. projecting parts and
controls

Mass Approx. 0.6 kg

— Continued on page 2 —

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Laboratories Licensing Corporation.

MDX-400 : FM/AM MINI DISC CHANGER

MDX-400RDS : FM/MW/LW(SW) MINI DISC CHANGER

SONY®



Supplied accessories	Rotary commander RM-X38 (1)
	Mounting hardware (1)
	Power connecting cord (1)
	Chassis ground cord (1)
	Front panel case (1)
	Bus (Unilink) cable (2 m) (1)
	RCA pin cord (2 m) (1)
	Antenna cord
	Main (1)
	Sub (1)

Design and specifications subject to change without notice.

SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

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Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.


Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

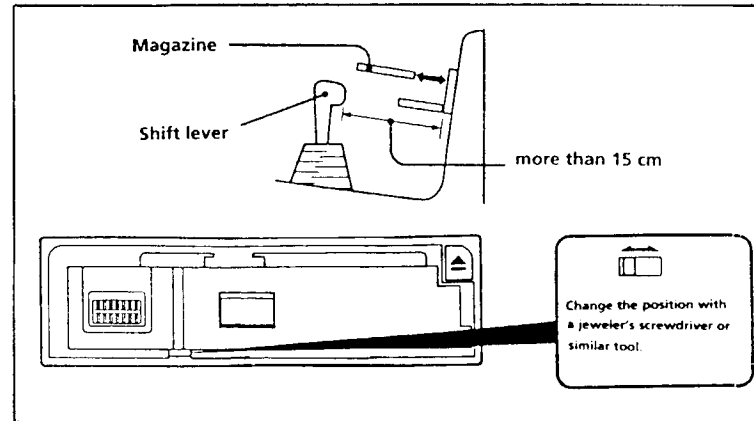
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Precautions



- To be able to easily insert and eject the magazine, there must be a distance of at least 15 cm between the magazine slot of the unit and the shift lever. Choose the installation location so that the unit does not interfere with gear shifting or other driving operations.
- Avoid installing the unit where it would be subject to high temperatures, such as from direct sunlight or hot air from the heater, or where it would be subject to dust, dirt or excessive vibration.
- Use only the supplied mounting hardware for a safe and secure installation.

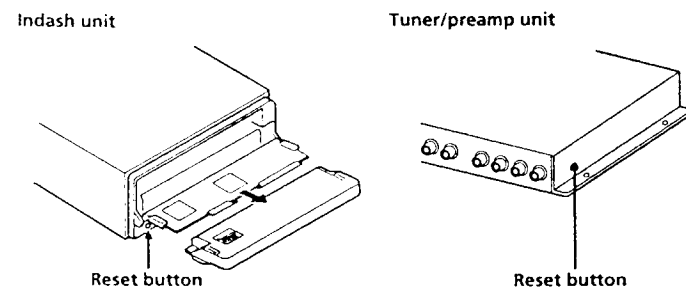
Mounting angle adjustment

Install the main unit at an angle between -20° and 30° . Depending on the angle your unit is installed, it may be difficult to read the displayed items in the display window. In this case, optimize contrast by changing the contrast adjust switch to one of three possible positions. (The switch is hard to see as it is located under the front panel.)

Reset Buttons

After installing and connecting, be sure to press the reset buttons with a ball-point pen or similar tool.

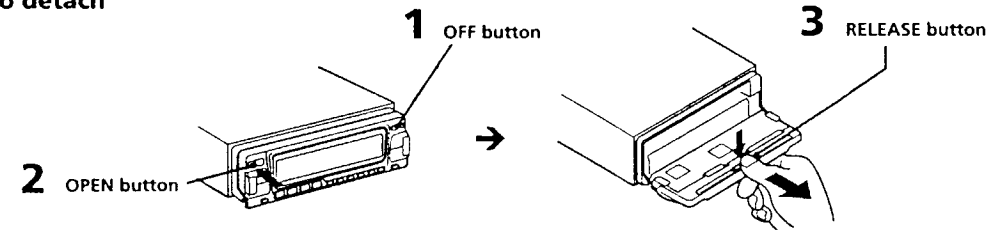
Press the reset button after completing the connections.



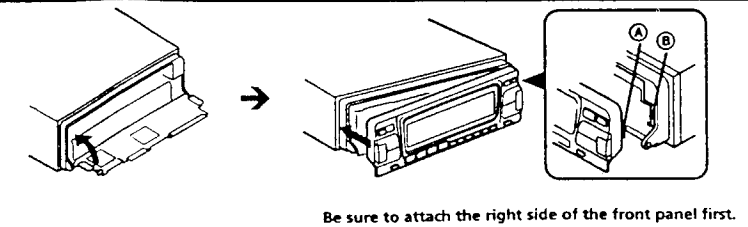
How to Detach and Attach the Front Panel

Be sure to detach the front panel before you start installing the main unit.

To detach

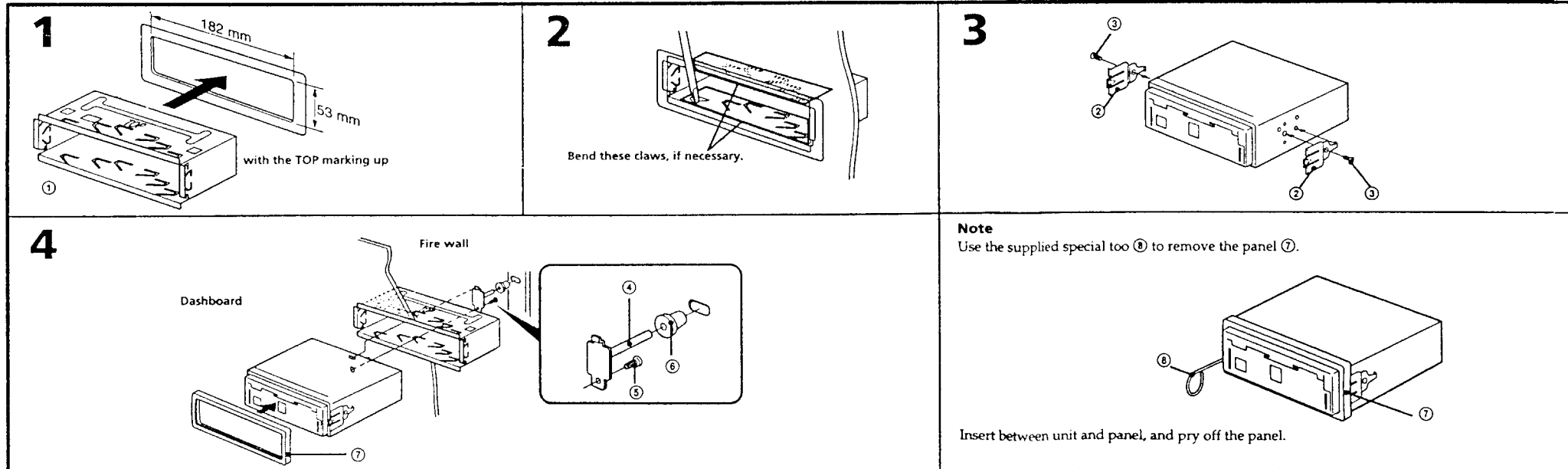


To attach



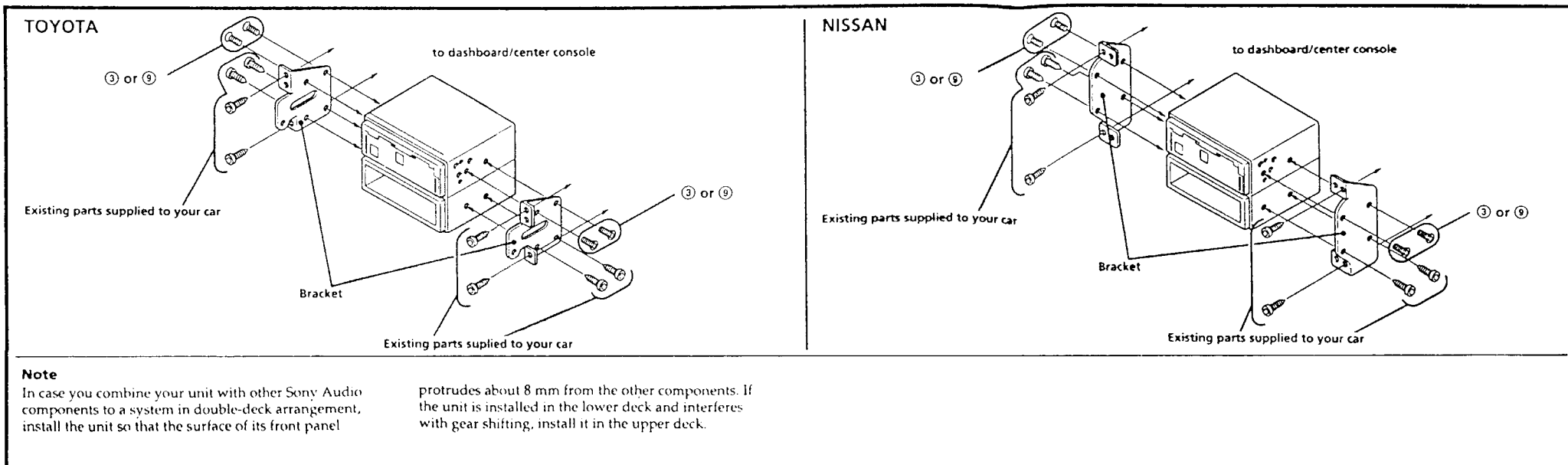
Main Unit Mounting Example

Installing into the dashboard.

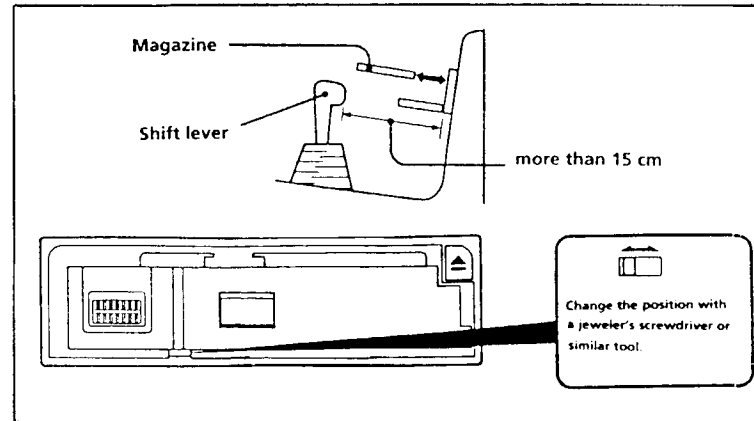


Mounting the Indash Unit in a Japanese Car

You may not be able to install this unit in some makes of Japanese cars. In such a case, consult your nearest Sony dealer.



Precautions



- To be able to easily insert and eject the magazine, there must be a distance of at least 15 cm between the magazine slot of the unit and the shift lever. Choose the installation location so that the unit does not interfere with gear shifting or other driving operations.
- Avoid installing the unit where it would be subject to high temperatures, such as from direct sunlight or hot air from the heater, or where it would be subject to dust, dirt or excessive vibration.
- Use only the supplied mounting hardware for a safe and secure installation.

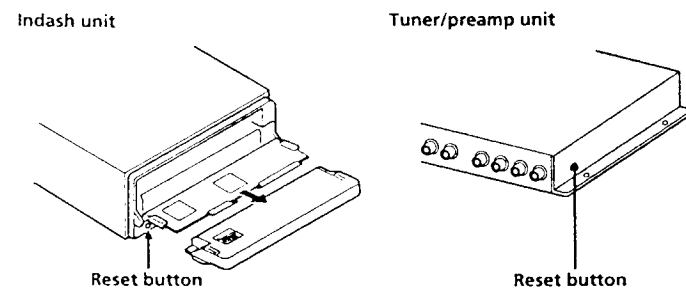
Mounting angle adjustment

Install the main unit at an angle between -20° and 30° . Depending on the angle your unit is installed, it may be difficult to read the displayed items in the display window. In this case, optimize contrast by changing the contrast adjust switch to one of three possible positions. (The switch is hard to see as it is located under the front panel.)

Reset Buttons

After installing and connecting, be sure to press the reset buttons with a ball-point pen or similar tool.

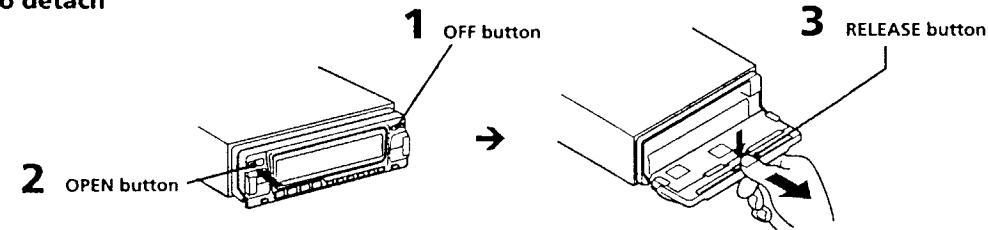
Press the reset button after completing the connections.



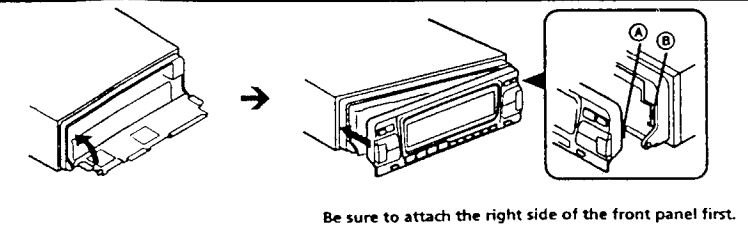
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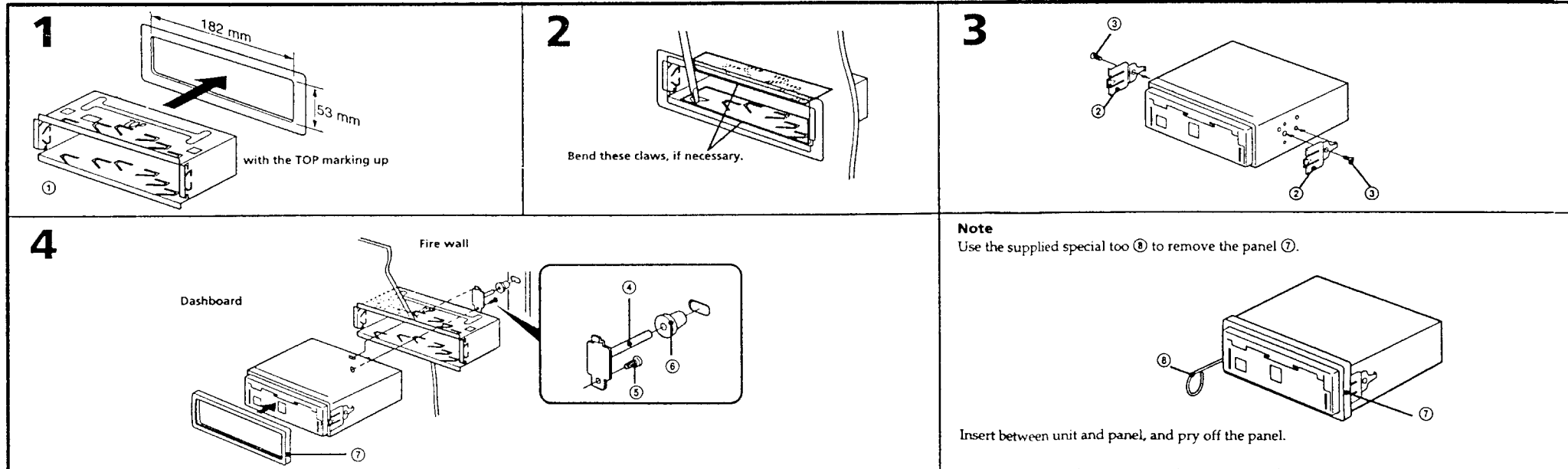


To attach



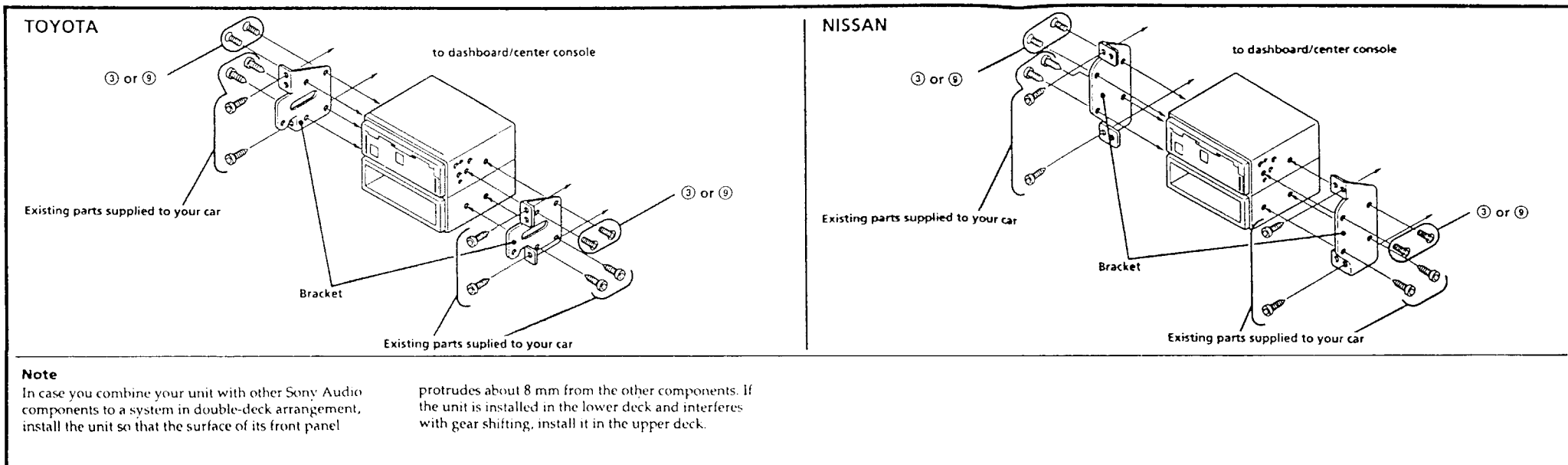
Main Unit Mounting Example

Installing into the dashboard.



Mounting the Indash Unit in a Japanese Car

You may not be able to install this unit in some makes of Japanese cars. In such a case, consult your nearest Sony dealer.



Connection

SECTION 1 GENERAL

Caution

- This unit is designed for negative ground 12 V DC operation only.
- Before making connections, disconnect the ground terminal of the car battery to avoid short circuits.
- Connect the yellow and red power input leads only after all other leads have been connected.
- Be sure to connect the red power input lead to the positive 12 V power terminal which is energized when the ignition key is in the accessory position.
- Run all ground wires to a common ground point.

When the Unit is Used in a Car with No Accessory Position on the Ignition Key Switch

— POWER SELECT Switch

To avoid this battery wear when using the unit in such a car, set the POWER SELECT switch located on the bottom of the unit to the OFF position. The illumination is reset to stay off when the unit is not being played.

Note

The caution alarm for the front panel is not activated when the POWER SELECT switch is set to the OFF position.

When FM Diversity Antennas are Used

— FM DIVERSITY Switch

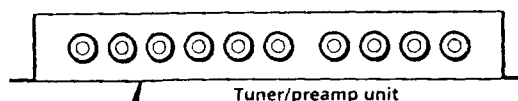
If you use this unit with diversity antennas, set the FM DIVERSITY switch located at the bottom of the tuner/preamp unit to the ON position to activate the diversity system.

When you do not use FM diversity antennas

If you wish to connect a conventional rod antenna, be sure to connect it to the antenna connector of the unit marked "MAIN", and set the FM DIVERSITY switch to the OFF position.

Note

The radio reception will be disturbed by noise if the connection of the antennas was not made properly or the FM DIVERSITY switch was not set correctly.



Tuner/preamp unit



Change the position with a jeweler's screwdriver or similar tool.

When you change the position of the switch, be sure to press one of the reset buttons after the connections are completed.

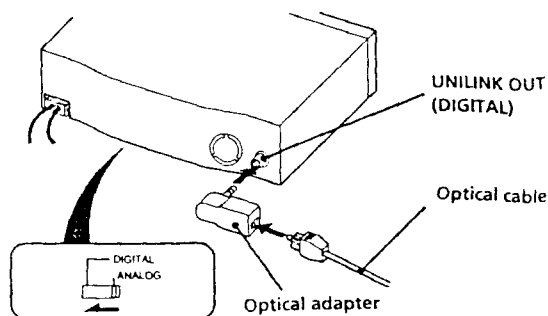
When making a digital connection

— DIGITAL/ANALOG Switch

To connect with the XDP-U50D, connect the optical cable (optional) to the optical adapter (optional), and plug the adapter into the special socket on the rear of the unit. Then set the DIGITAL/ANALOG switch to DIGITAL.

Note

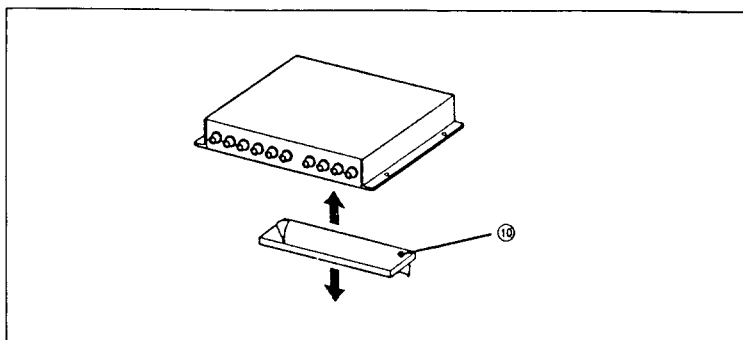
- The DIGITAL/ANALOG switch is factory-set to ANALOG.
- After changing the switch position, make sure to press one of the RESET buttons.
- If the switch is not correctly set, the unit will work without producing a sound.



Installing the Tuner/Preamp Unit

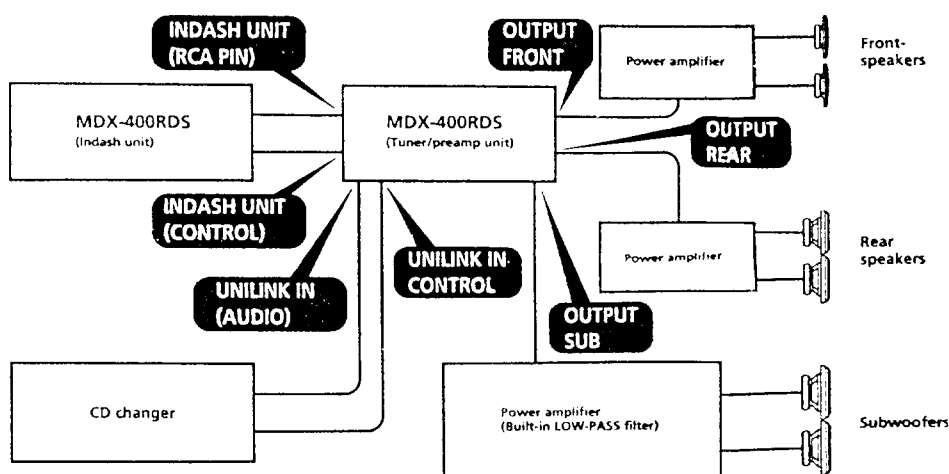
- Choose the installation location so that the tuner/preamp unit does not interfere with operating the car and poses no danger to passengers.
- We recommend to install the tuner/preamp unit on the passenger's side below the dashboard.
- Depending on the installation location of the tuner/preamp unit, you may need the Bus(Unilink) cable (supplied with an RCA pin cord) RC-62 (2 m) when you combine the unit with other car audio components to a system.

Before attaching the double-sided adhesive tape, clean the surface where you intend to attach it.

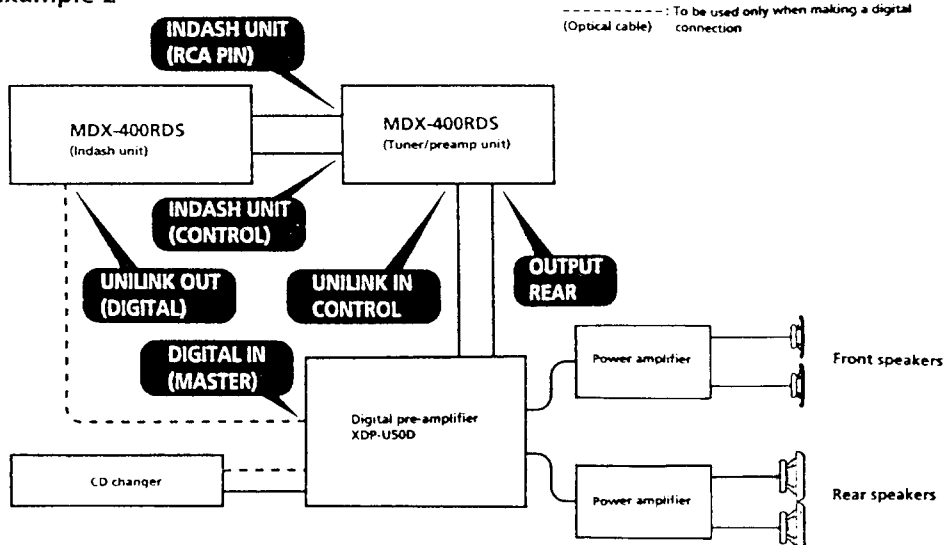


Connection Diagram

Example 1

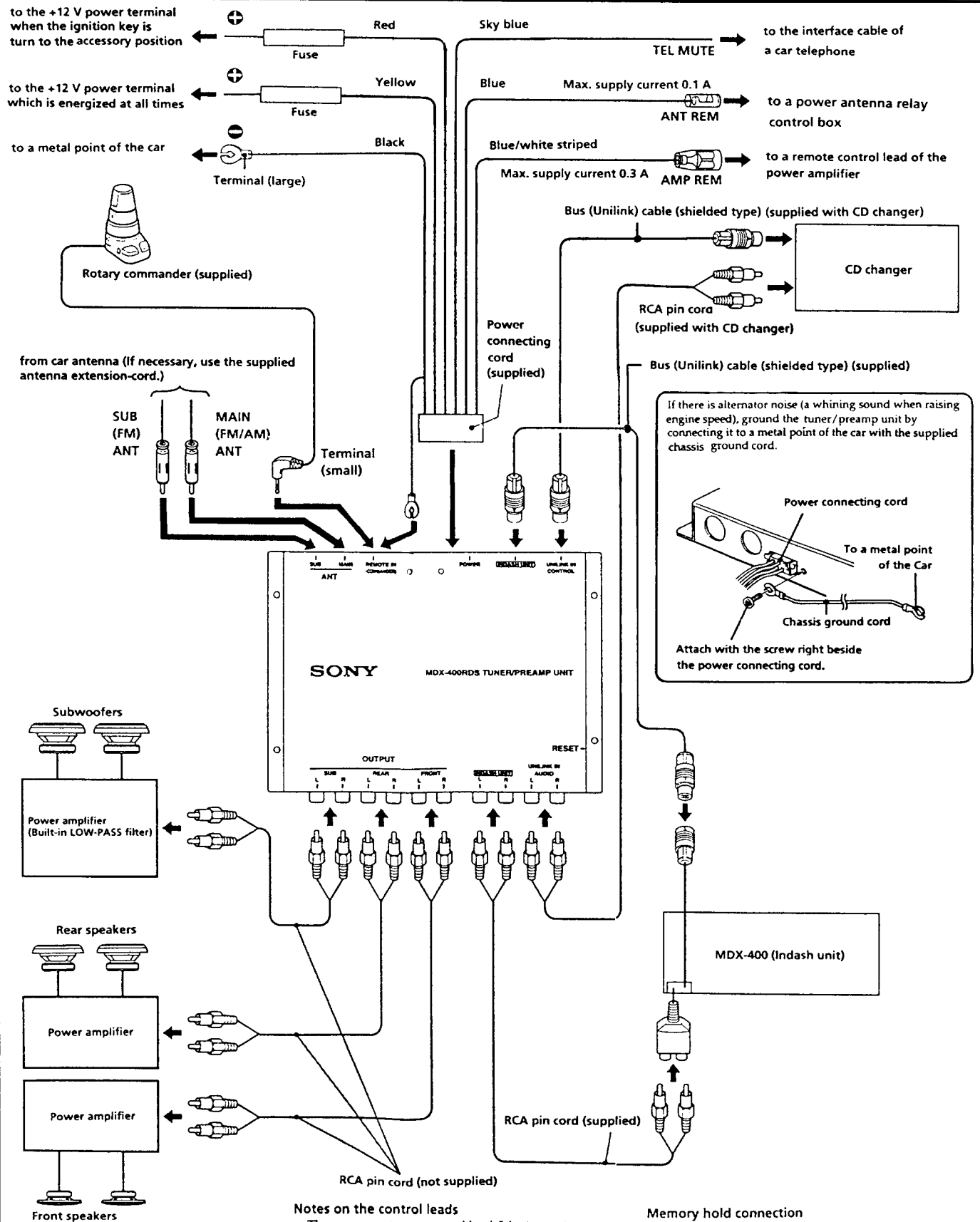


Example 2



In case you want to make a digital connection by connecting the indash unit and the XDP-U50D with the optical cable, make sure to connect UNILINK OUT (DIGITAL) of the indash unit with DIGITAL IN (MASTER) of the XDP-U50D.

Connection Example



Notes on the control leads

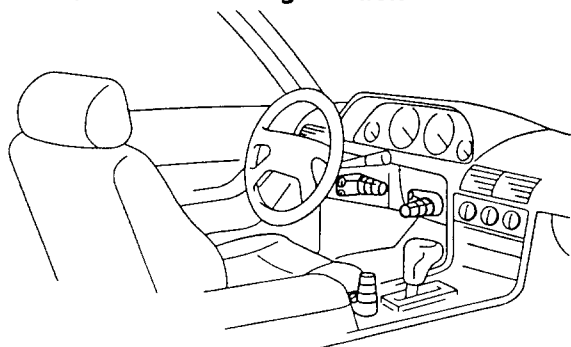
- The power antenna control lead (blue) supplies +12 V DC when you turn on the tuner.
- A power antenna without relay box cannot be used with this unit.

Memory hold connection

When the yellow power input lead is connected, power will always be supplied to the memory circuit even when the ignition key is turned off.

Installation

Example of a mounting location



Installing the Rotary Commander

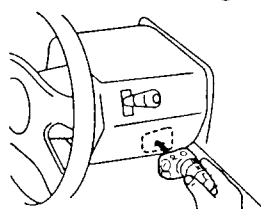
Before installation

Be sure to select the position of the operational direction switch on the bottom of the rotary commander before mounting it. See "Operational direction switch" for details. Mount the rotary commander onto a suitable place which is the most convenient position for operating it such as the steering wheel column, the dashboard or the center console etc.

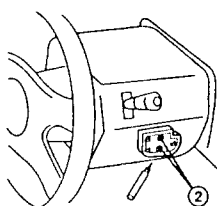
Notes

- Choose the mounting location carefully so that the rotary commander will not interfere with operating the car.
- Do not install the rotary commander in a place where it may jeopardize the safety of the (front) passenger in anyway.
- When installing the rotary commander, be sure not to damage the electrical cables etc. on the other side of the mounting surface.
- Avoid installing the rotary commander where it may be subject to high temperatures, such as from direct sunlight or hot air from the heater etc.

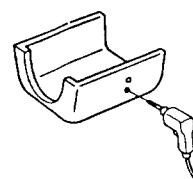
- 1** Choose the exact location for the rotary commander to be mounted, then clean the mounting surface area.



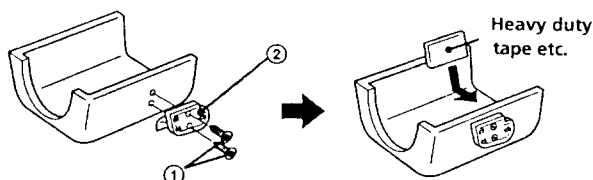
- 2** Mark two positions for the supplied screws.



- 3** Remove the steering wheel column cover and drill 2 mm diameter holes where you have marked.

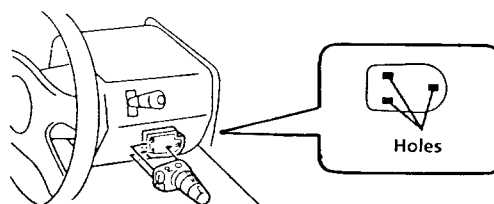


- 4** Warm the mounting surface and the double-sided adhesive tape on the mounting hardware ② to the temperature of 20°C to 30°C, and attach the mounting hardware onto the mounting surface by applying even pressure. Then screw it down with the supplied screws ①.



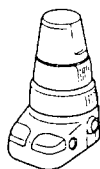
Attach a piece of heavy duty tape etc. on the other side of the mounting surface to cover the protruding tips of the screws so that they will not interfere with the electrical cables etc. inside the steering wheel column.

- 5** After installing the steering wheel column cover, attach the rotary commander to the mounting hardware by aligning the three holes on the bottom of the commander to the three catches on the mounting hardware and sliding the commander until it locks into place as illustrated.



Note

If you are mounting the rotary commander to the steering wheel column, make sure that the protruding tips of the screws on the inner surface of the column do not in anyway hinder or interfere with the movement of the rotating shaft, operative parts of the switches or the electrical cables etc. inside the column.



Use a jeweler's screwdriver or similar tool to change the position.

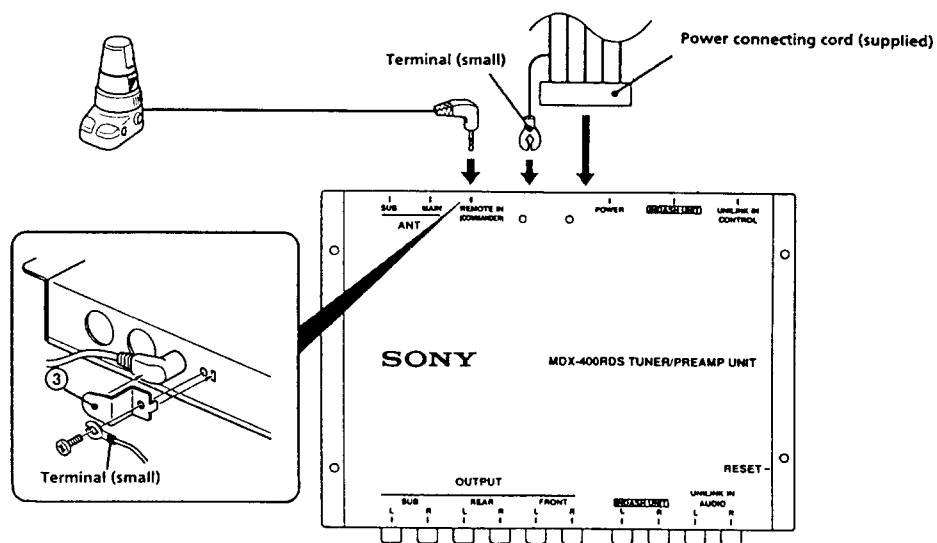
Operational direction switch

The operational direction of every control on the rotary commander may be wrong way round for you due to where the commander is mounted.

If you do not like the operational directions of the controls, change the setting of the operational direction switch which is located on the bottom of the commander. The operational directions of the controls on the commander will be the other way round.

Connection

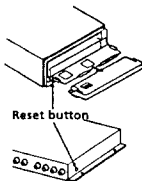
Connecting the Rotary Commander



Remove the screw attached to the tuner/preamp unit, and connect the rotary commander. Then use the screw to install the plug holder ③ and the terminal (small) of the black lead (ground) from the power connecting cord.

Precautions

- Before operating the unit for the first time or after replacing the car battery, press the reset button on the front panel with a ball-point pen etc., and then start operating the unit.



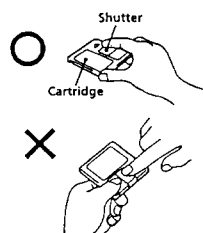
- If your car was parked in direct sunlight resulting in a considerable rise in temperature inside the car, allow the unit to cool off before operating it.
- If no power is being supplied to the unit, check the connections first. If everything is in order, check the fuse.
- When the ambient temperature is extremely high or low, the display window may become difficult to see. However this is not a malfunction. When the temperature becomes moderate, the display will become normal.

If you have any questions or problems concerning your unit that are not covered in this manual, please consult your nearest Sony dealer.

Notes on MiniDiscs

Since a MiniDisc itself is housed in a cartridge, free from accidental contact with your fingers and dust etc., it can withstand a certain degree of rough handling. However, dirt or dust on the surface of the cartridge or a warped cartridge may cause a malfunction of the unit. To enjoy optimum sound quality, observe the following.

Never touch the surface of the MiniDisc itself by deliberately opening the shutter on the cartridge



Do not expose the MiniDisc to direct sunlight or heat sources such as hot air-ducts. Do not leave it in a car parked in the direct sunlight where there can be a considerable rise in temperature.

Make sure that it is not left on a dashboard or a rear tray of a car etc. where the temperature can also be excessive.



Cleaning

Wipe the surface of the MiniDisc cartridge from time to time with a soft dry cloth.

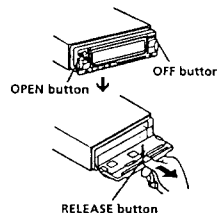
Moisture condensation

On a rainy day or in a very damp area, moisture may condense on the lenses inside the unit. Should this occur, the unit will not operate properly. In this case, remove the MiniDisc and wait for about an hour until the moisture evaporates.

Detaching and Attaching the Front Panel

To detach

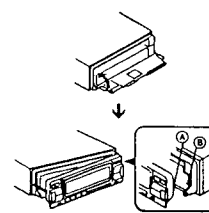
First, be sure to press the OFF button to cut off power supply to the unit. Next, press the OPEN button and open the front panel. Then detach the front panel by pulling it towards you while holding down the RELEASE button.



Be sure not to drop the panel when detaching it from the unit.

To attach

First, close the bracket to which the front panel was attached. Then attach part ③ of the front panel to part ② of the unit, and press on the left side of the front panel until it locks in place.



Be sure to attach the right side of the front panel first.

Notes

- Do not press the front panel hard against the unit when attaching it to the unit. It can easily be attached by pressing it lightly against the unit.
- When you carry the front panel with you, put it in the supplied front panel case.
- Do not press hard or give excessive pressure to the display window of the front panel.
- Before removing the front panel, be sure to turn the power off. However, if you press the OPEN button to detach the panel while the unit is still turned on, the power will be automatically turned off in order to protect the speakers from being damaged.
- Do not expose the front panel to direct sunlight, heat sources such as hot air ducts or leave it in a humid place. Never leave it on the dashboard etc. of a car parked in direct sunlight where there may be a considerable rise in temperature inside the car.

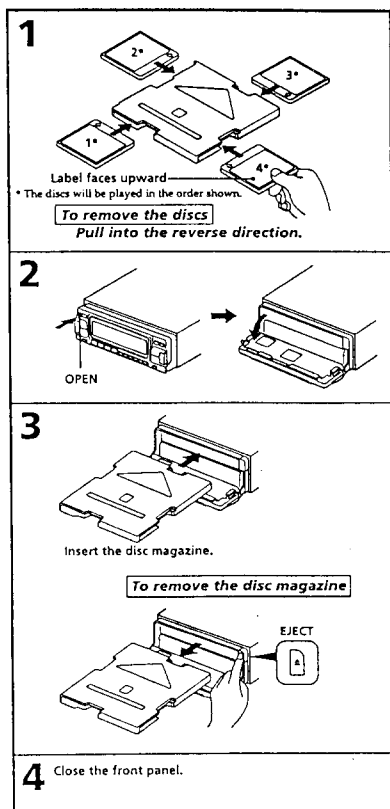
Caution alarm

If you turn the ignition key to the OFF position without removing the front panel, the caution alarm will be activated and a beep tone will be heard for a few seconds (only when the POWER SELECT switch is set to the ON position).

For Safe Driving

We recommend you to use the supplied rotary commander to operate this unit. When you need to use the buttons on the unit for registering the custom file or setting the DSP modes etc., be sure to do so while the car is parked.

Preparations



Notes

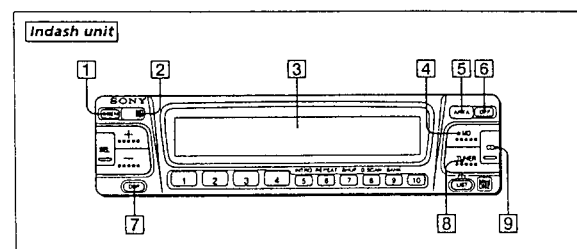
- To avoid malfunction, do not apply excessive force onto the disc magazine, and do not touch its interior.
- Do not insert MiniDiscs with the label facing downwards.
- Before inserting MiniDiscs into the magazine, make sure their shutters are closed.

Note

When the front panel is open, do not place items on it or do not apply strong force onto it.

To change only one MiniDisc Press the EJECT button. When the magazine has been ejected, you can replace the disc which is in location "1" of the magazine.

Location and Function of Controls

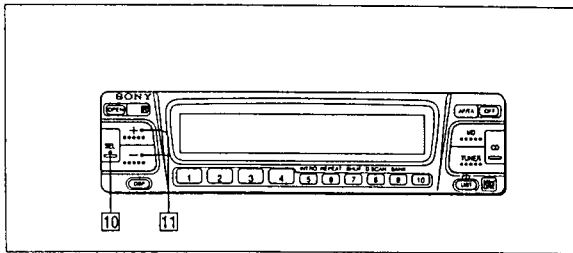


- OPEN (front panel open) button
- Receptor for the remote commander
- Display window
You can adjust the contrast of the display window.
See "Precautions" in the Installation/Connections manual.
- MD (MiniDisc play) button
- AF/TA (alternative frequency/traffic announcement) button
Each time the button is pressed, the function changes in order of:
AF → TA → AF/TA → none → AF (MDX-400RDS ONLY)
- OFF button
Press to turn off the unit.
- DSP* (DSP mode on/off/select) button
If pressed lightly with the DSP XDP-U50D connected, this button will function as the DSP mode on/off button. If you press for more than one second, the unit will enter the DSP select/adjust mode. Each time you press the button, the DSP select/adjust mode and the display on the display window will change as follows:

Display window	DSP select/adjust mode
SUR	Surround menu select/Effect level adjust
LP	Listening position adjustment
SUB	Subwoofer tone/volume adjustment
BAS	Bass adjustment
TRE	Treble adjustment

* Digital Signal Processor

- TUNER (radio on/band select) button
Each time the button is pressed, the band changes in order of:
FM1 → FM2 → MW → LW (SW on the models for Germany, Switzerland and Austria) → FM1
- CD (disc play/CD changer select) button



10 SEL (control mode select) button

11 button

Normally, the button is pressed to control the volume.

Pressing the SEL button changes the mode as follows:

SUB → BAS → TRE → BAL → FAD → VOL

Press the button (to adjust the level) within three seconds, or the volume mode will return.

Display window	Control mode	Press - side	Press + side
SUB	SUB out level control	For less volume	For more volume
BAS	Bass control*1	For less bass	For more bass
TRE	Treble control*1	For less treble	For more treble
BAL	Balance control*3	To decrease the right speakers' volume	To decrease the left speakers' volume
FAD	Fader control*1,2	To decrease the rear speakers' volume	To decrease the front speakers' volume
VOL	Volume control	For less volume	For more volume

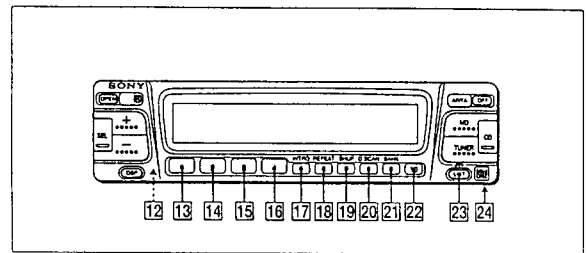
*1 The level of the SUB output cannot be adjusted.

*2 • When the optional XDP-US0D is connected, the fader settings can be set separately for the DSP on mode and DSP off mode.

• When you use a stereo graphic equalizer (not supplied), set the fader control to the center position and adjust the level with the equalizer.

*3 The level of the SUB output can be adjusted as well.

Location and Function of Controls



12 Reset button (located on the front side of the indash unit hidden by the front panel and on the side of the tuner/preamp unit)

Press this button when you use this unit for the first time, when you have changed the car battery, or when the buttons of this unit do not function properly.

	During MiniDisc playback	During CD play	During Radio reception
13 1	The direct disc selection buttons	—	•
14 2	Press the button whose number corresponds with the desired disc number.	—	•
15 3	—	—	•
16 4	—	—	•
17 INTRO button	Intro scan	•	•
18 REPEAT button	Repeat play	•	•
19 SHUF button	Shuffle play	•	•
20 D.SCAN button	Disc scan	•	•
21 BANK button	—	Bank play	•
22	—	—	•

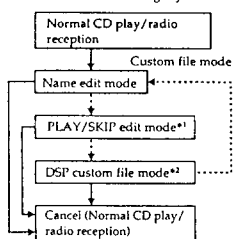
* The buttons 13 - 22 function as the direct disc selection buttons as well during CD play. Press the button whose number corresponds with the desired disc number for more than one second.

23 LIST (custom file mode select - set/list up) button

Each time the button is pressed, the mode changes as follows:

→ Press the button for more than two seconds.

.... → Press the button lightly.



*1 The unit enters this mode only when the CD custom file function is activated.

*2 The unit enters this mode only when the DSP custom file function is activated.

When you press the button lightly, MD information (disc name), information about a selected CD or radio station will appear on the LCD in batches of four.

24 DIGITAL/ANALOG switch (located on the bottom of the indash unit)

See the description about the DIGITAL/ANALOG switch in the Installation/Connections manual.

Changing the illumination color

Press the button while pressing the button. You can choose the color between amber and green.

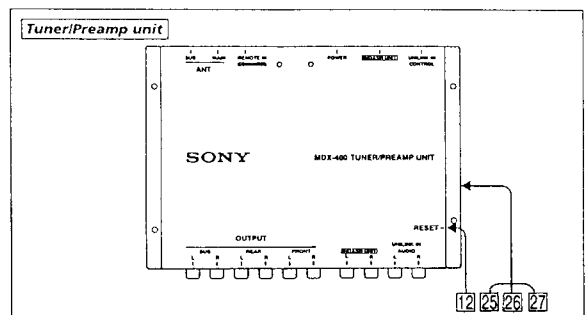
When listening at low volume with enhanced bass and treble (loudness function)

Press the button while pressing the button. When the optional XDP-US0D is connected, the loudness function will not work.

Muting the beep tone

Press the button while pressing the button. To obtain the beep tone again, press these buttons once more.

Location and Function of Controls



25 Frequency select switch (located on the bottom of the tuner/preamp unit)

See the description about the "Frequency Select Switch" in the installation/connection manual. (MDX-400 ONLY)

26 POWER SELECT switch (located on the bottom of the unit)

See "POWER SELECT Switch" in the Installation/Connections manual.

27 FM DIVERSITY switch (located on the bottom of the unit)

See "FM DIVERSITY Switch" in the Installation/Connections manual.

Location and Function of Controls

Rotary Commander

SOURCE selector (VOL (volume) control)

- Press to select program sources. Each time the button is pressed, the program source mode changes as follows:
Radio → CD → MD → Radio.
- Turn to adjust the volume.

PRESET/DISC control

During MiniDisc/CD play
Changes the discs. (In case of CD play, the CD changer(s) has(have) to be connected.)

During Radio reception

Receives the stations memorized on the preset number buttons. (Preset search function)

SEL button

Functions in the same way as the SEL button on the indash unit.

Turn Press

When the POWER SELECT switch is set to the OFF position, the unit cannot be operated with the rotary commander unless one of the source buttons on the unit is pressed or a disc magazine is inserted to activate the unit first.

Note

If the SEEK/AMS control is kept at the rotated position and the end of the disc has been reached, "E" will appear on the display window. Likewise, if the beginning of the disc has been reached, "L" will appear on the display window.

* Automatic Music Sensor

SEEK/AMS control

During MiniDisc/CD play

AMS* function
Locates the beginnings of the tracks. Rotate the control the number of times you wish to skip the tracks.

Manual search

Locates the desired part of a track. Rotate the control either left or right and keep it in the rotated position until the desired part is located.

During Radio reception

Automatic tuning

Automatically tunes to a station. When a station is tuned in, the search stops automatically. Rotate the control several times until a desired station is tuned in.

Manual tuning

Manually searches a station. Rotate the control either left or right and keep it in the rotated position until the desired station is tuned in.

DSPL (display mode change/time set) button

MD play	Disc title • Elapsed playback time → Track title • Elapsed playback time → Clock
Radio reception*	Frequency → Clock
CD play	Disc title* • Elapsed playback time → Clock

*1 The display modes when RDS function is in operation. (MDX-400RDS ONLY)

*2 If the title has not been registered, the "NO Name" indication will appear on the main display window.

MODE button

During Radio reception

Selects radio bands.

Each time the button is pressed during radio reception, the band changes as follows:

FM1 → FM2 → MW → LW (SW)
→ FM1 (MDX-400RDS ONLY)
FM1 → FM2 → AM → FM1
(MDX-400 ONLY)

During CD play

Selects CD changers when several CD changers are connected.

OFF button

Functions in the same way as the OFF button on the indash unit.

Operational direction switch

If the position of the switch is changed, the operational direction of every control will be the other way around. Select the position with a jeweller's screw-driver etc.

BTM/SENS/SCRL (Best Tuning Memory/sensitivity/scroll) button

BTM SENS/SCRL

MUTE button

Press to mute the sound momentarily. Press again to restore the same volume level. This button will be also canceled: — when the BTM button or the OFF button is pressed.

Location and Function of Controls

Optional Wireless Remote Commander (RM-X40)

Installing the Batteries



Two size AA (R6) batteries

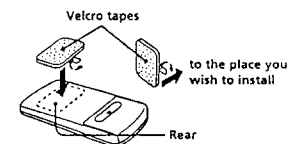
Battery life

When the batteries become weak, you will not be able to operate the unit with the remote commander. Battery life is approx. six months although it depends on the way of use.

Notes on batteries

To avoid damage from battery leakage and corrosion:
— insert the batteries with correct polarity
— do not use an old battery with a new one, or different types of batteries together
— remove the batteries when you do not use the unit for a long period of time
— do not charge the batteries.
If any battery leakage occurs, replace the batteries with new ones after cleaning the battery compartment.

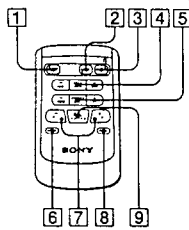
Installing the Remote Commander



Install the remote commander with Velcro tape in a desired place.

- Do not leave the remote commander in a location near any heat sources, or in a place subject to direct sunlight (especially on the dashboard in summer, etc.).
- When you park the car in direct sunlight, place the remote commander in a location not subject to direct sunlight such as the glove-box.
- Before installing the remote commander, be sure to confirm whether you can remote-control the unit from the place you intend to install the commander.
- Before attaching the Velcro tape, clean the surface.

Optional Wireless Remote Commander (RM-X40)



Buttons with the same function as those on the indash unit

- 1 OFF button
- 2 (sub output level/bass/treble/balance/fader/volume control) button
- 9 SEL (control mode select/character set) button

Buttons with the same function as those on the rotary commander

During MiniDisc/CD play	During radio reception
2 MODE button Selects CD changers when several CD changers are connected.	2 MODE button Selects radio bands.
3 SOURCE button Press to select program sources.	3 SOURCE button Press to select program sources.
4 AMS (Automatic Music Sensor) button*	4 AMS (Automatic Music Sensor) button*
5 DISC (disc change) button	5 DISC (disc change) button



* You cannot do the manual search and manual tuning with the remote commander.

- 6 MUTE button
- 8 DSPL (display mode change/time set) button

When the POWER SELECT switch is set to the OFF position, the unit cannot be operated with the wireless remote commander unless one of the source buttons on the unit is pressed or a disc magazine is inserted to activate the unit first.

Setting the Calendar Clock

How to Set the Time


(Following explains how to set with the rotary commander. It is also possible to set with the  and  buttons on the unit.)

For example, setting to 10:08

- 1 Turn the Ignition key to the ON position.
- 2 If the time digits do not appear, press the DSPL button (on the rotary commander).
- 3 Press the DSPL button for more than two seconds.
 - Rotate the VOL control either left or right to set hour digits.
 - Press the SEL button.
 - Rotate the VOL control either left or right to set minute digits.
- 4 The calendar clock will activate when you press the DSPL button.



Notes

- You cannot set the calendar clock with the optional remote commander.
- If the POWER SELECT switch on the bottom of the unit is set to the OFF position, the clock cannot be set unless the power is turned on. Set the clock after you have turned on the radio, or started MiniDisc or CD play.

Even if you press other buttons (except the SEL and  buttons), the clock will activate.


Setting the Calendar Clock

How to Set the Date

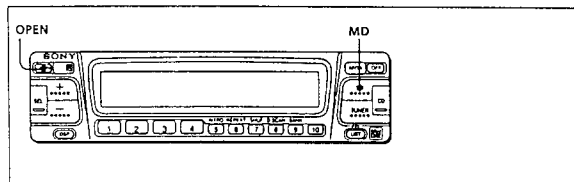
(Following explains how to set with the rotary commander. It is also possible to set with the  and  buttons on the unit.)

For example, setting to July 17.

- 1 While holding down the DSPL button for more than two seconds as described in step 3 of "How to Set the Time", press the SEL button.
 - Rotate the VOL control either left or right to set the month.
 - Press the SEL button.
 - Rotate the VOL control either left or right to set the day.
 - Press the SEL button.
 - Rotate the VOL control either left or right to set the week.
- 2 The calendar clock will activate when you press the DSPL button.

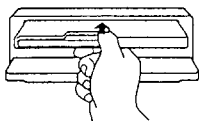
Even if you press other buttons (except the SEL and  buttons), the clock will activate.

Listening to MiniDisc Play



See also "Preparations" on page 6

Press the OPEN button, and open the front panel. Insert the magazine with the discs loaded until it locks in place.




When you close the front panel, the MiniDisc title* will appear momentarily. Then playback will start from the first track with the track title* being displayed.

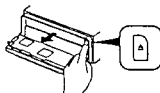
If a MiniDisc is already inserted, press the MD button.



After the title of the MiniDisc has been displayed, the title of the currently played track* will be displayed. If the title is too long (more than 12 characters), you can scroll it from right to left by pressing the SCRL button (on the rotary commander) lightly.

Ejecting the Magazine

Press the OPEN button to open the front panel. Then press the  button.




When the last track on the MiniDisc is over
The next disc will be played from the beginning of its first track.
When the last track on the fourth disc has finished, the player returns to the beginning of the first disc.

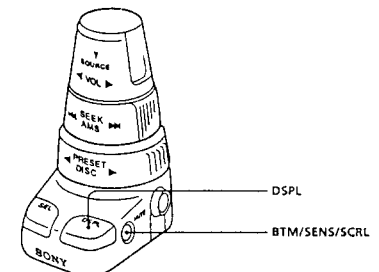
Note

If a MiniDisc is already loaded in the unit, never try to insert another MiniDisc. Doing so may damage the unit.

* Only if there are prerecorded titles on the MiniDisc.

After opening the front panel, do not press the  button until the blinking in the unit stops.

Listening to MiniDisc Play



To display the calendar clock during MiniDisc play

Press the DSPL button until the calendar clock display appears.



To display the title of the currently played MiniDisc or track manually

Press the DSPL button until the desired display appears on the display window.



If these data are not prerecorded on the currently played MiniDisc "NO Disc Name", "NO Track Name" will appear for one second. If the title is too long, you can scroll it across the display window by pressing the BTM/SENS/SCRL button.



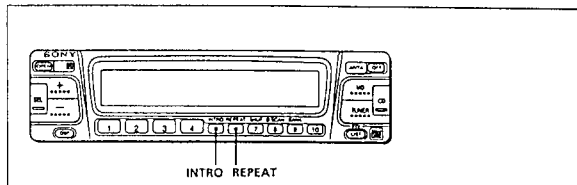
To display the recording date of the currently played MiniDisc

Press the BTM/SENS/SCRL button for more than two seconds while playing a MiniDisc. The recording date of the track will be displayed for approx. three seconds.



This function will work only if the recording date is registered on the MiniDisc.

Playing in Other Modes



Listening to the First 10 Seconds of Each Track — Intro Scan Function*

Press the **INTRO** button lightly during MiniDisc play to get the "INTRO" indication.

The first 10 seconds of all the tracks on the currently selected disc are played in order. After the first disc played with the intro scan function is over, the next disc will be played.

When you find the desired track, press the **INTRO** button again. The unit returns to the normal MiniDisc play mode.

Playing a Track or Disc Repeatedly — Repeat Play Function

Playing the currently selected track repeatedly — Track repeat

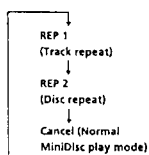
Press the **REPEAT** button lightly during MiniDisc play to get the "REP 1" indication.

Playing the currently selected disc repeatedly — Disc repeat

Press the **REPEAT** button lightly during MiniDisc play to get the "REP 2" indication. When the last track on the currently selected disc is over, this MiniDisc will be repeated from the beginning.

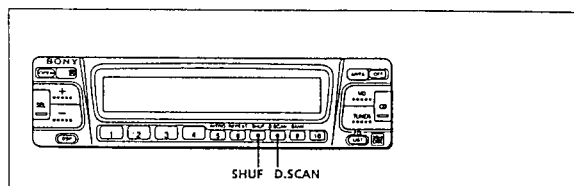
* If the **INTRO** button is pressed during shuffle play, the first ten seconds of each track will be played randomly.

The function of the **REPEAT** button changes cyclically as follows:



MiniDisc Changer Operation

Playing in Other Modes



Playing Tracks or Discs Randomly — Shuffle Play Functions

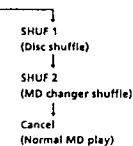
Playing the tracks on the currently selected disc randomly — Disc shuffle play

Press the **SHUF** button lightly during MiniDisc play to get the "SHUF 1" indication. Each track on the MiniDisc will be played randomly once. When all the tracks on a disc have been played, the unit continues with the next disc. To cancel the mode, press the button again.

Playing each track on each disc in the MiniDisc changer randomly — MiniDisc changer shuffle play

Press the **SHUF** button lightly during MiniDisc play to get the "SHUF 2" indication.

The function of the **SHUF** button changes cyclically as follows:

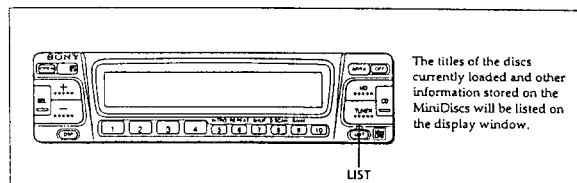


Searching for a desired disc in the magazine — Disc Scan Function

Press the **D.SCAN** button lightly during MiniDisc play to get the "D.SCAN" indication.

The first 10 seconds of each disc in the disc magazine are played in order. When you find the desired disc, press the **D.SCAN** button again. The unit returns to the normal MiniDisc play mode.

Displaying Information stored on MiniDiscs



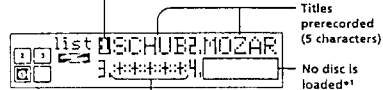
The titles of the discs currently loaded and other information stored on the MiniDiscs will be listed on the display window.

MiniDisc Changer Operation

Displaying on the display window

Press the **LIST** button lightly during MiniDisc play.

Currently playing disc number



*1 A blank space will be displayed if there is a disc number representing an empty slot in the disc magazine.

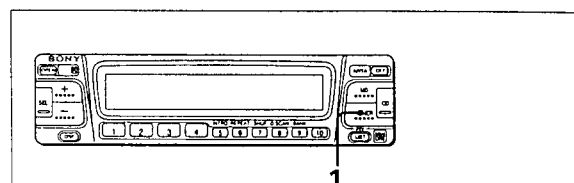
*2 If a title is prerecorded on the MiniDisc, that name will be displayed. If there is no prerecorded title, "*****" will be displayed. If the disc information has not been read yet, "7" will be displayed.

Turning off the display

Press the **LIST** button once more.

Note
It may take some time before all the indications appear on the display.

Tuning in a Station



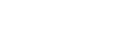
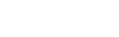
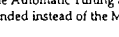
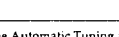
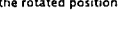
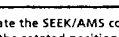
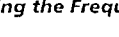
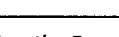
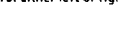
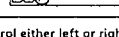
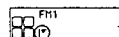
Searching for the Stations Automatically

Automatic Tuning

1 Select the desired band.

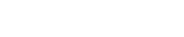
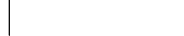
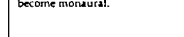
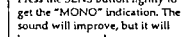
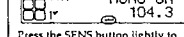
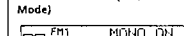
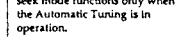
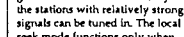
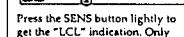
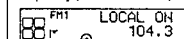


or



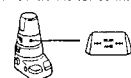
The "ST" indication will appear, when an FM stereo program with a sufficient signal strength is tuned in.

Avoiding the automatic tuning from stopping on stations too frequently (Local Seek Mode)



Tuning in by Adjusting the Frequency — Manual Tuning

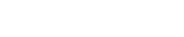
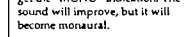
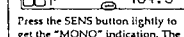
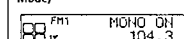
Select the desired band, then rotate the **SEEK/AMS** control either left or right and keep it in the rotated position until the desired station is tuned in.



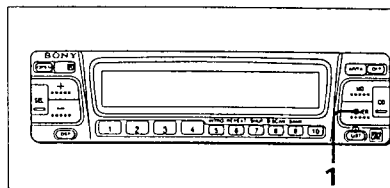
PREVENTING ACCIDENTS

While you are driving, the use of the Automatic Tuning and the Memory Preset Tuning is recommended instead of the Manual Tuning.

If FM stereo broadcasting is difficult to receive (Monaural Mode)



Memorizing the Stations Automatically



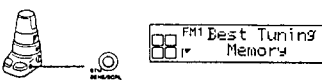
The best receiving stations are automatically searched and memorized on each band MDX-400 (FM1, FM2, and AM), MDX-400RDS (FM1, FM2), MW and LW (SW). Up to 10 stations on each band can be stored on the preset number buttons 1 to 10 in order of frequency.

Memorizing the Stations Automatically — BTM (Best Tuning Memory) Function

- 1 Select the desired band.



- 2 Press the BTM button of the supplied rotary commander for more than two seconds.



You can use the supplied rotary commander or the optional wireless remote commander as well.

The receivable frequency ranges of the FM bands (FM1, FM2) are the same. Therefore, 20 stations can be memorized on FM.

Note
There may be cases, where there are not enough receivable stations due to the lack of stations in the vicinity or weak broadcasting signals. In such cases, the BTM operation may stop without all the buttons being occupied with memorized stations.

The BTM function

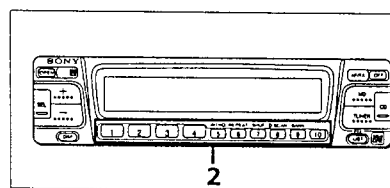
During radio reception, the BTM function searches all the receivable stations within the currently selected band and memorizes the ones in good receiving conditions in sequence from the lowest frequency.

How to memorize the stations on the preset number buttons

- When there is no preset number indicated on the display window, all the preset number buttons set in the currently selected band will be filled with the memories.
- When there is a preset number indicated on the display window, the unit will memorize the stations on the preset number buttons from the one currently being displayed. For example, when you choose FM2 and preset number 3 is being displayed, the operation will start from preset number 3 on FM2, and will stop at preset number 10 on FM2.

Radio Reception

Memorizing Only the Desired Stations



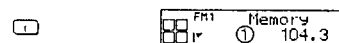
Up to 10 stations on each band MDX-400 (FM1, FM2, and AM), MDX-400RDS (FM1, FM2), MW and LW (SW)) can be stored on the preset number buttons in order of your choice.

For example, storing a station on preset number button 1.

- 1 Tune in the station which you wish to store on the preset number button.

For the explanation of how to tune in, refer to "Tuning in a Station" on page 24.

- 2 Keep the preset number button pressed for about two seconds until a beep tone is heard.

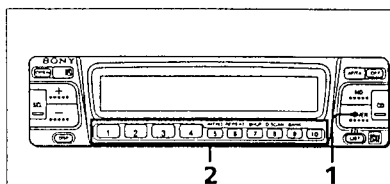


The number of the pressed preset number button now appears on the display window.

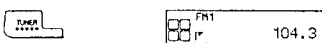
Repeat the same procedure to store other stations.

Each preset number button has only one memory location per band.
If you try to store another station on the same preset number button, the previously stored station will be erased.

Receiving the Memorized Stations



- 1 Select the desired band.



- 2 Press the desired preset number button lightly.

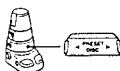


You can use the supplied rotary commander or the optional wireless remote commander as well.

Notes
• There may be cases, where even the stations which are stored in the memory cannot be received due to weak signals in the vicinity of your car.
• If you keep pressing the preset number button for more than two seconds, the currently received station will be memorized once more. To receive the previously memorized station, make sure to press the preset number button only lightly.

Receiving in Order the Stations Stored in the Memory — Preset Search Function

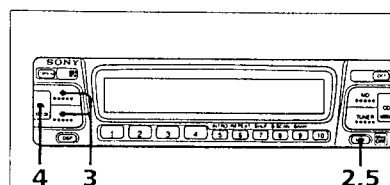
You can search the stations memorized on the preset number buttons by receiving them in order when you rotate and hold the PRESET button on the rotary commander repeatedly.



Radio Reception

Displaying the Name of Each Station

— Station Memo Function (MDX-400 ONLY)



You can assign a name to each radio and store it in memory. The name of the station currently tuned in can be displayed on the display window.

Storing the Station Names in the Memory of the Tuner

- 1 Tune in a station whose name you wish to register.

For the explanation of how to tune in, refer to "Tuning in a Station" on page 24.

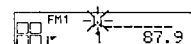
- 2 Press the LIST button for more than two seconds to enter the name edit mode.



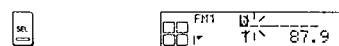
- 3 Press the button to select the desired characters.

Each time you press the button, the characters will change in the following order:

→ A+B+C...+X+Y+Z+0+1+2+3+...
 → ., + < > > / < * * - + > 9 + ...



- 4 Press the SEL button after locating the desired character.



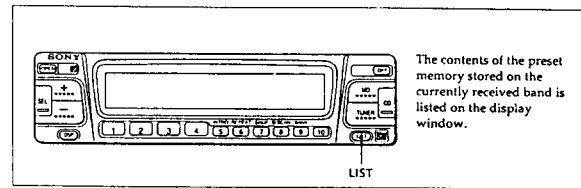
The cursor moves to the next space on the right. Repeat steps 3 and 4 to enter the entire name. Up to eight characters can be used per name.

To each station you can assign one name.

You can use the supplied rotary commander or the optional wireless remote commander as well.

Notes
• If you press the SEL button when the eighth character (farthest right character) is flashing the cursor will move back to the first character (farthest left character).
• If you wish to put a blank space after a character, select the " " (under-bar).

Displaying the Contents of the Preset Memory (MDX-400 ONLY)



The contents of the preset memory stored on the currently received band is listed on the display window.

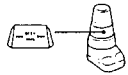
(MDX-400 ONLY)

5 ④ To return to the normal radio reception mode

LIST

Press the LIST button for more than two seconds.

⑤ To continue to put names onto the stations



Tune in another station and repeat the procedure.

Changing a name

Tune in the station whose name you wish to change and repeat steps 2 to 5.

Erasing a name

- 1 Tune in any station.
- 2 Press the LIST button for more than two seconds to enter the name edit mode.
- 3 Press the button while pressing preset number button 5.
- 4 Press the button to search for the names you wish to erase.
- 5 Press the LIST button for more than two seconds. Repeat steps 4 and 5 if necessary.
- 6 Press the LIST button for more than two seconds. The unit returns to the normal radio/TV reception mode.

Note

You can store up to 44 names. If you try to enter more names, the "Memory FULL" indication will appear on the display window, and you will not be able to register them. You can register more names after erasing some of the existing names.

Alternative method for erasing a name

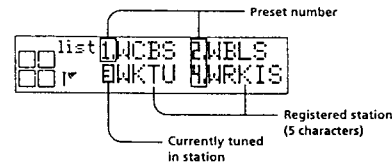
You can erase a name by selecting eight "s" (under-bars) as described in step 3 of "Storing the Station Names in the memory of the Tuner" (page 28).

Displaying on the display window

Press the LIST button lightly during radio reception.

LIST

Example: When receiving the FM1 band



- Including the currently received preset station, the contents of preset numbers 1 to 4, or 5 to 8, or 9 and 10 will be displayed.
- If the name of a station is registered, that name will be displayed. If the name of a station is not registered, the frequency of that station will be displayed.

Turning off the display

Press the LIST button again.

Notes

- It may take some time before all indications appear on the display.
- In case of listening to a station which is not preset, it will not be displayed when you press the LIST button.

Overview of the RDS Function (MDX-400RDS ONLY)

What is RDS?

The RDS (Radio Data System) is a radio digital information system developed and introduced in 1987 by the EBU (European Broadcasting Union). Using the 57 kHz sub-carrier of FM broadcasting, the RDS enables you to receive a variety of information such as station names and traffic information. It also offers some useful functions such as automatic re-tuning of the best available signal carrying the chosen program. However, the availability of the RDS data is varied in different areas. Therefore, there may be cases where you may not be able to receive some of the following data.

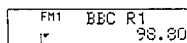
The RDS digital data includes the following:

PI	Program Identification	TA	Traffic Announcement
PS	Program Service Name	PTY	Program Type
AF	List of Alternative Frequencies	EON	Enhanced Other Networks
TP	Traffic Program	CT	Clock Time

The following functions are available with this unit using the RDS data. Refer to the marked pages for the operational instructions.

Station Service Name Display

This function displays the name of the station which is currently tuned in on the display window.



Automatic Re-tuning

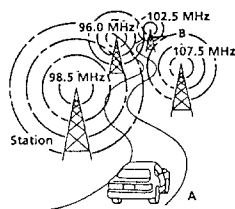
— AF Function

This function automatically re-tunes to a station with a relatively stronger signal within the same broadcasting network using the PI and AF data.

The illustration on the right shows an example of a car passing through an area with four stations of the same broadcasting network between points A and B.

As the car moves on, the reception frequency of the station in the network changes from 98.5 MHz to 107.5 MHz then to 96.0 MHz and to 102.5 MHz.

By using the AF function, the driver will be able to keep listening to a program in the same broadcasting network without tuning in the station manually every time he enters a different frequency zone between points A and B.



Traffic Announcement Reception

— TA Function

This function searches and stands by for a traffic information station using the TP and TA data. Using this function, the unit automatically searches the station and changes its mode to receive the traffic announcement when the broadcasting starts while you are listening to MiniDisc or CD play.

Enhanced Other Networks

— EON function

The EON function extends the faculty of the TA and TP function by enabling the unit to track other stations transmitting the EON data while it is tuned to a network station.

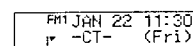
Note

Even if you are listening to a network station, the unit will automatically monitor local EON stations. When there is a local traffic announcement, the unit will automatically tune to that station and will re-tune to the previous station when the broadcast is over.

Setting the Clock Using the CT Function of the RDS

The CT function of the RDS enables the built-in clock in the unit to automatically synchronize with the CT data being received by the tuner section of the unit.

To activate the CT function, press the button while pressing the SEL button. The "CT" indication appears on the display window.



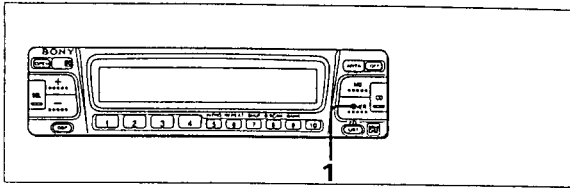
To cancel the function, press these buttons once more.

If the CT function is being activated while you adjust the clock manually, the clock will be automatically adjusted by the CT data the next time the unit receives it.

Notes

- There may be cases when the CT function may not be activated even if an RDS station is being received.
- Even if you use the CT function, adjust month, day and time beforehand.

Station Service Name Display (MDX-400RDS ONLY)



- 1 Select the FM band.
- 2 Tune in a desired station by using the Automatic Tuning or Manual Tuning.

If the unit is set in the station service name display mode and a station transmitting the RDS data is received, the name of that station will be displayed on the display window.

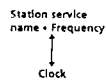
When the "—" indication appears on the display window in the station service name display mode: The received station is not an RDS station.

When the unit is in the frequency display mode and an RDS station is received: The "•" display appears to indicate that an RDS station is received. To find out the name of the station, press the DSPL button to change the display mode.

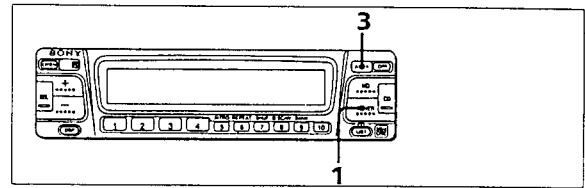
Notes

- The RDS data can be received only on the FM band.
- The RDS functions of this unit will not be activated if the FM station being received is not transmitting the RDS data. It may also not work properly in areas where the RDS transmissions are in the experimental stage.

You can change the display mode by pressing the DSPL button. Each time you press the button, the display mode changes as follows:



Automatic Re-tuning — AF Function (MDX-400RDS ONLY)



- 1 Select the FM band.
- 2 Tune in a desired RDS station by using the Automatic Tuning or Manual Tuning (page 24).
- 3 Press the AF/TA button to get the "AF" indication.

The unit begins to search for an alternative station with a stronger signal in the same network from the AF data (List of Alternative Frequencies). If a stronger signal station is found, the unit re-tunes in that station. If no strong station is found, both the "NO AF" and the program station name indications flash.

Notes

- When the "AF" indication appears on the display window, only the RDS stations can be tuned in by the Automatic Tuning.
- If the tuned in RDS station is not transmitting the AF data, this function will not work.
- If you press the AF/TA button while the MW or LW (SW) band is being tuned in, the FM1 band will be automatically selected.

RDS Station Reception

Selecting REG ON or REG OFF

Press the AF/TA button for more than two seconds. The unit gives a confirmation beep. The "REG ON" or "REG OFF" indication appears on the display window. (There may be cases that this function may not be activated in some areas outside Germany, especially in the United Kingdom.)

Regional Programs
Sometimes a national radio network broadcasts regional programs. With the RDS function, you can switch the "regional checking" function to on (REG ON) or off (REG OFF).
REG ON: The tuner remains tuned to the current regional program.
REG OFF: The tuner may re-tune to another regional program in the network.

Automatic Re-tuning (MDX-400RDS ONLY)

Network Stations Memory

When the unit stores an RDS station transmitting the AF data on a preset number button, it stores not only its frequency but also its PI, AF, PS and PTY data. The AF data carries the information of the list of the frequencies of the stations within the same broadcasting network. The unit will store the data in its memory whether the AF function is activated or not.

PI Sorting with the BTM Function

You can automatically store the RDS stations in order of their PI codes on the preset number buttons. If the AF function is activated when you initialize the BTM function, the RDS stations transmitting the PI data will be searched and stored in order on the preset number buttons. Likewise you can store the traffic information stations in the same way by the TA function before activating the BTM function.

Getting the Stored RDS Stations Tuned in from the Broadcasting Networks

Be sure to press the preset number buttons after pressing the AF/TA button to activate the AF function. The AF function will select a better signal station by re-tuning within the network stations. If you press the preset number buttons without activating the AF function, you will not be able to use this function. In this case, you will only get the individual stations which were tuned in on the previous occasion. The unit will not re-tune to the other stations in the network even if they are stored in the memory.

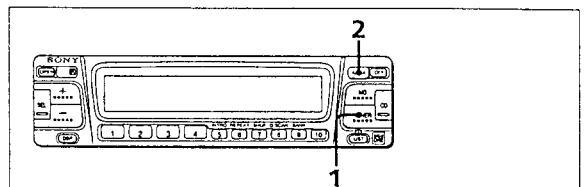
Local Link Function — United Kingdom Only

If you cannot receive the local station which you have previously stored on one of the preset number buttons or if you do not like the currently broadcast program on the stored local station, you can receive alternative local station(s) by pressing the same preset number button within five seconds of initial reception. If there are several receivable alternative local stations available in the vicinity, press the same preset number button several times until the desired station is received.

RDS Stations Transmitting the EON Data

The EON data incorporates the AF data of other stations as well. Therefore, the unit can update the AF data of the preset stations and these stations will be tuned in the next time the preset number buttons are pressed.

Receiving Traffic Announcements — TA Function (MDX-400RDS ONLY)



Receiving a Traffic Information Station

- 1 Select the FM band.
- 2 Press the AF/TA button to get the "TA" indication.

The search for a traffic information station starts. When an RDS station transmitting the TP data is found, the search stops and the "TP" indication appears on the display window.

To search another RDS station transmitting traffic announcements
Turn the SEEK/AMS control on the rotary commander while the "TA" indication is still on the display window.

Notes

- Do not activate the TA function in an area where there is no traffic information broadcasting service available. If you do so, the unit will keep searching for it and other stations cannot be tuned in.
- If you activate the TA function while the MW or LW (SW) band is tuned in, the FM1 band will be automatically selected and the unit will start searching for a traffic information station.
- When the traffic information station cannot be received, after the "NO TP" indication flashes for approx. four seconds, the unit will begin to search automatically for a station whose traffic information can be received.

If the TA function is activated while the unit is receiving a station which is transmitting the EON data, the "TA", "TP" and "EON" indications will appear on the display window. In this case, if another station starts broadcasting a traffic announcement, the unit will automatically tune to that station. When the announcement is over, the unit will re-tune to the previous station.

To cancel the reception of traffic announcements by other stations

Press the AF/TA button until the "AF, TA-OFF" indication appears on the display window.

"TA" Indication
This indicates that the traffic announcement is on the air.

"TP" Indication
This indicates that the currently tuned in RDS station offers a traffic information service.

"EON" Indication
This indicates that the unit is receiving the station transmitting the EON data.

RDS Station Reception

Standing by for Traffic Announcements while Listening to MiniDisc or CD

Press the **MDA** button to get the "TA" indication during MiniDisc or CD play.

The MiniDisc or CD play continues while the unit searches for a traffic information station.

When a station is found:
The "TP" indication appears on the display window.



When a traffic announcement starts:
The "TA" indication starts flashing. The MiniDisc or CD play stop and the traffic announcement is heard.



When the announcement is over:
The MiniDisc or CD play resumes from where it was left off.

To cancel the stand-by mode

Press the AF/TA button to turn off the "TA" indication.

Changing the display to that of the frequency or station name during MiniDisc or CD play
Press the DSPL button on the rotary commander a few times. While the frequency or station service name is being displayed, the SEEK/AMS and PRESET/DISC controls on the rotary commander and the preset number buttons on the indash unit will function in the same way as they do during radio reception.

Traffic Announcements are Heard at the Preset Volume Level

When a traffic announcement starts, you can hear it at the preset volume level even if the volume control on the front panel has been turned down. (If you are listening to other sources with a higher volume level, the level will not change.) The preset volume level can be set in the following manner:

- 1 Select the FM band.
- 2 Adjust the volume to the desired level.
- 3 Press the preset number button 3 while pressing the **MDA** button.
A beep tone will be heard when the setting has been completed.

PTY (Program Type) Data and the Emergency Announcement Reception

It is essential that the built-in micro computer has memorized the necessary RDS data in advance.

Press the **PTY** button to get the "PTY" indication displayed on the display window during FM reception.

If an RDS station transmitting the PTY data is received, the name of the PTY data currently being received will be displayed on the display window. The PTY data names include "NEWS", "AFFAIRS", "INFO" etc. The PTY data name and the "PTY" indication will disappear within five seconds.

To receive another station broadcasting the same or different PTY data

- ① If the "PTY" indication is being displayed:
Turn the SEEK/AMS control on the rotary commander.
- ② If the "PTY" indication is not being displayed:
Press the PTY button to get the "PTY" indication displayed, then turn the SEEK/AMS control on the rotary commander.

In case of an emergency, or in a situation where there may be danger from a natural disaster in the area, the RDS stations will transmit the PTY data information to warn drivers that they are in danger. The emergency data includes the character display and the interruption signal for automatically turning on the radio.

This data can be received while the AF or TA function is being activated.

If the unit receives the emergency data from an RDS station during MiniDisc or CD play, the "AF" indication on the display window will start flashing and MiniDisc or CD play will stop. The radio will be automatically turned on to receive the emergency announcement from the station.

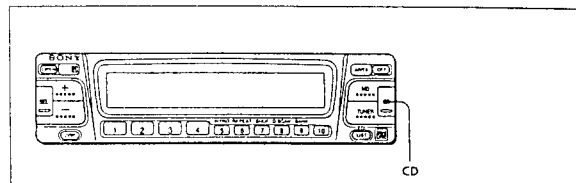
Notes

- The PTY function may not be activated immediately after the unit is used for the first time. This is because the unit has not yet memorized some of the RDS data necessary to utilize the PTY function. It is also possible that the stations in your vicinity are not transmitting the PTY data.
- With the PTY function on, the unit receives the available PTY data such as: NEWS, AFFAIRS, INFO, SPORT etc. If a specific data is not available during a search, the "NO DATA" indication will be displayed and if there is no PTY data available at all, the "NONE" indication will be displayed on the display window.

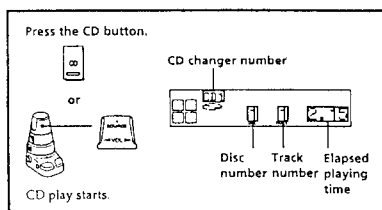
RDS Station Reception

Listening to CD Play

(With the Optional CD changer(s) Connected)



CD



Listening to the Discs in Another CD changer (when two or more CD changers are connected)

Press the CD button during CD play.

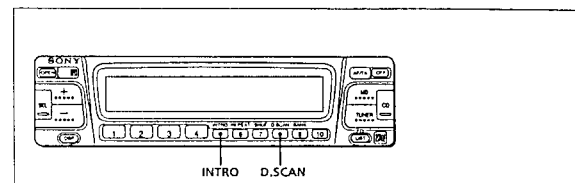


The CD changer number changes.

You can use the optional wireless remote commander as well.

If the unit is set in the normal playing mode, after the end of a disc, the disc with the next number shown will be automatically played. If two or more CD changers are connected, after the end of the last disc, the first disc in the CD changer with the next number shown will be played. The order of the CD play can be rearranged by changing the playing modes. For details, see "Playing in Other Modes" (page 37).

Playing in Other Modes



INTRO D.SCAN

Listening to the first 10 seconds of each track — Intro Scan Function*

Press the **INTRO** button lightly during CD play.

The first 10 seconds of all the tracks on the currently selected disc are played in order. After the first disc is played with the intro scan function, the next disc is played. When two or more CD changers are connected, after the last disc is played, CD play moves on to the next CD changer.

When you find the desired track, press the INTRO button again. The unit returns to the normal CD play mode.

Searching for a desired disc in the CD changer(s) — Disc Scan Function

Press the **D.SCAN** button lightly during CD play to get the "D.SCAN" indication.

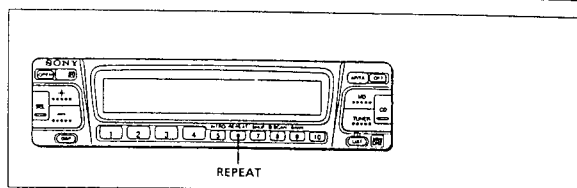
The first 10 seconds of each disc in the CD changer(s) are played in order. When you find the desired disc, press the D.SCAN button again.

The unit returns to the normal CD play mode.

- * If the INTRO button is pressed during shuffle play, the first ten seconds of each track will be played randomly.

CD Changer Operation

Playing in Other Modes



Playing a Disc Repeatedly

— Repeat Play Functions

Playing the currently selected track repeatedly — Track repeat

Press the **REPEAT** button lightly to get the "REP 1" indication during CD play.

Playing the currently selected disc repeatedly — Disc repeat

Press the **REPEAT** button lightly to get the "REP 2" indication during CD play.

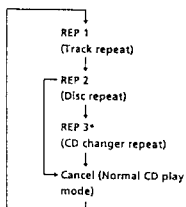
When the last track on the currently selected disc is over, the CD play is repeated from the beginning of that disc.

Playing the discs in the currently selected CD changer repeatedly — CD changer repeat (when two or more CD changers are connected)

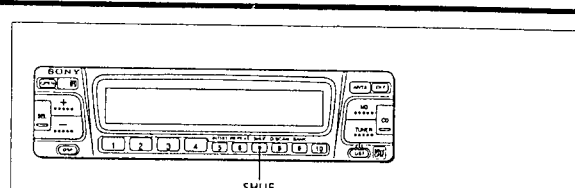
Press the **REPEAT** button lightly to get the "REP 3" indication during CD play.

When the last disc in the CD changer has been played, the CD play will be repeated from the first disc in the currently selected CD changer.

The function of the REPEAT button changes cyclically as follows:



* CD changer repeat (REP 3) mode functions only when two or more CD changers are connected to the unit. When only one CD changer is connected, the "REP 3" indication will not be displayed. In this case, if you press the REPEAT button again while the "REP 2" indication is being displayed, the repeat mode will be canceled.



Playing the Discs Randomly

— Shuffle Play Functions

Playing the tracks on the currently selected disc randomly — Disc shuffle play

Press the **SHUF** button lightly to get the "SHUF 1" indication during CD play.

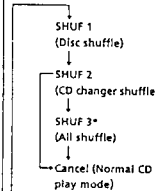
Playing every track on every disc in the currently selected CD changer randomly — CD changer shuffle play

Press the **SHUF** button lightly to get the "SHUF 2" indication during CD play.

Playing every track on every disc in all the CD changer(s) connected randomly — All shuffle play (when two or more CD changers are connected)

Press the **SHUF** button lightly to get the "SHUF 3" indication during CD play.

The function of the SHUF button changes cyclically as follows:

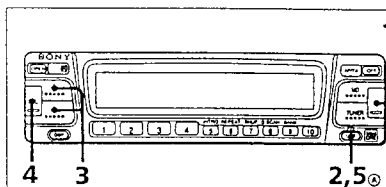


* All-shuffle play (SHUF 3) mode functions only when two or more changers are connected to the unit. When only one changer is connected, the "SHUF 3" indication will not be displayed. In this case, if you press the SHUF button again while the "SHUF 2" indication is being displayed, the shuffle play will be canceled.

CD Changer Operation

Displaying the Title of Each Disc

— Disc Memo Function



You can put a title of your own choice onto a disc (one title per disc). The title can be displayed on the display window while the disc is being located and played.

Putting Your Personalized Titles onto the Discs

- 1 Play the disc that you wish to title.
- 2 Press the LIST button for more than two seconds to enter the name edit mode.
- 3 Press the **SEL** button to select the desired characters. Each time you press the **SEL** button, characters, symbols etc. change in the following order:
- 4 Press the SEL button after locating the desired character.

Note
This function works only when (a) CD changer(s) with custom file feature is (are) connected.

You can use the VOL control and the SEL button on the supplied rotary commander.

Notes
• If you press the SEL button when the eighth character (farthest right character) is flashing, the cursor goes back to the first character (farthest left character).
• If you wish to put a blank space after a character, select " " (under-bar).

- 5 **ⓐ** To return to the normal CD play mode

Press the LIST button for more than two seconds.
ⓑ To continue to put titles onto the discs

Changing a title

Play the disc whose title you wish to change and repeat steps 2 to 5.

Erasing a title

- 1 Select the CD changer and play any disc.
- 2 Press the **LIST** button for more than two seconds to enter the name edit mode.
- 3 Press the **SEL** button while pressing the preset number button 5.
- 4 Press the **SEL** button to select the title that you wish to erase.
- 5 Press the **LIST** button for more than two seconds. Repeat step 4 and step 5 if necessary.
- 6 Press the **LIST** button for more than two seconds. Now, the title and the PLAY/SKIP settings are erased. The unit returns to the normal CD play mode.

If you press the CD button, the next CD changer will be selected (when two or more CD changers are connected).

When you change the title, the PLAY/SKIP settings of the bank function or any setting of the DSP custom file function will not be erased at the same time.

The alternative method to erase a title
You can erase a title by selecting eight " "s (under-bars) as described in step 3 of "Putting Your Personalized Titles onto the Discs" (page 40).

CD Changer Operation

Displaying the Title of Each Disc

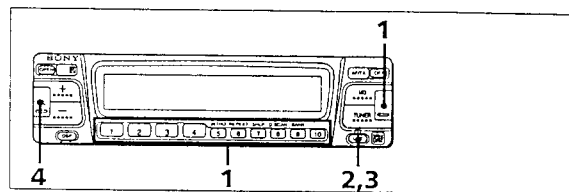
Custom file function

You can register the customized titles and the PLAY/SKIP settings on up to 110 discs* per CD changer (custom file function). These settings are stored in the memory of the CD changer. Therefore, even if you take a custom-filed disc out of the CD changer, you can still use the same CD changer. Furthermore, if your system has several CD changers connected, you can play that disc in another CD changer and still use the same custom file function, provided that the CD changers are inter-connected with the Bus (Unilink) cables.

* If you try to register more than 110 discs, the unit will display the "FULL" indication and will not accept the command for custom-filing. In this case, you will have to erase the memory of other discs before you can enter the new ones.

Playing Selected Tracks on a Disc

— Bank Function



Setting the Play and Skip Modes on the Discs

- 1 Play the disc to which you wish to set these modes.
- 2 Press the LIST button for more than two seconds and put the titles onto the discs.

See page 40 for details about putting on a title. If the title has already been registered, go to step 3.
- 3 Press the LIST button lightly to enter the PLAY/SKIP edit mode.

PLAY/SKIP edit mode
- 4 Rotate the AMS control either left or right to select the track number you wish to skip and press the SEL button.

The indication changes from "PLAY" to "SKIP". If you wish to return to "PLAY", press the SEL button once more. Repeat the operation in this step to set either the "PLAY" or "SKIP" mode on all the tracks.

(continued on next page)

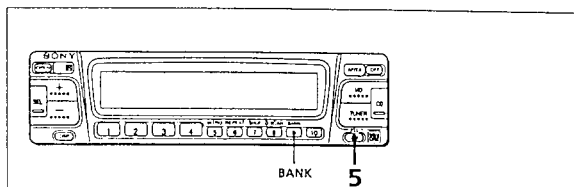
Notes

- This function works only when (a) CD changer (s) with custom file feature is (are) connected.
- You can use the supplied rotary commander on the optional wireless remote commander as well.

Notes

- When the title is not registered, you cannot enter the PLAY/SKIP edit mode even if you press the LIST button.
- You can set the "SKIP" mode only onto up to 24 tracks. If a disc has more than 24 tracks, you will not be able to set the "SKIP" mode on the tracks after the 24th track.
- You cannot set the "SKIP" mode onto all of the tracks on a disc.

Playing Selected Tracks on a Disc



- 5 Press the LIST button for more than two seconds.

LIST

The unit returns to the normal CD play mode.

Playing with the Bank Function

Press the BANK button lightly during CD play.



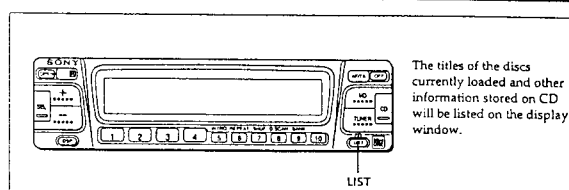
The "BANK" indication appears on the display window. The unit starts playing the tracks with "PLAY" settings which have been set by the PLAY/SKIP edit mode.

To return to the normal CD play mode, press the BANK button once more.

When the BANK button is pressed while pressing the SEL button, the unit starts playing the tracks with "SKIP" settings which have been set by the PLAY/SKIP edit mode. To go back to the normal playing mode, press the BANK button again while pressing the SEL button.

Even when you play a disc with the PLAY/SKIP settings, the disc will not be played according to the settings if the "BANK" indication has not appeared on the display window.

Displaying Information stored on CD

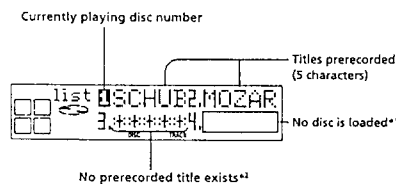


The titles of the discs currently loaded and other information stored on CD will be listed on the display window.

Displaying on the display window

Press the LIST button lightly during CD play.

Example: When the CD changer 1 is selected.



Including the currently played disc, the titles of discs 1 to 4, 5 to 8, or 9 and 10 will be displayed together.

- *1 A blank space will be displayed if there is a disc number representing an empty slot in the disc magazine.
- *2 If a title is prerecorded on the CD, that name will be displayed. If there is no prerecorded title, "*****" will be displayed. If the disc information has not been read yet, "?" will be displayed.

Turning off the display

Press the LIST button once more.

Note

It may take some time before all the indications appear on the display.

Overview of the DSP Function

(When the optional XDP-US0D is connected)

If you connect the optional XDP-US0D, you can add some effects to the soundfield of the currently selected program source.

What is a Digital Signal Processor (DSP)?

The DSP can digitalize and process the audio signal with high speed thus enabling you to adjust the acoustic characteristics of the source sound without losing the sound quality. With the DSP unit you can control the audio output and adjust the acoustic characteristics according to your preference.

The DSP edit mode

The DSP function includes following select/adjust modes:

- Surround (SUR) menu select/effect level control mode
- Listening position (LP) adjust mode
- Subwoofer (SUB) cut-off frequency/volume control mode
- Bass (BAS) adjust mode
- Treble (TRE) adjust mode
- Fader (FAD) adjust mode

Display window	Selected mode	Adjustment of
SUR	Surround menu	Effect Level
LP1	Listening position	Left, right, front and rear listening position
SUB	Cut-off frequency	Subwoofer volume
BAS	Bass turn-over frequency	Bass volume
TRE	Treble turn-over frequency	Treble volume

In addition, there are also following DSP-related functions:

- DSP custom file function
- Last sound memory function

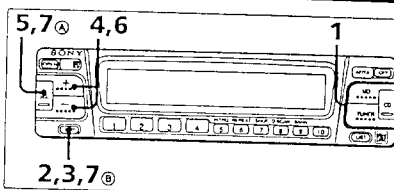
Adjust all modes as described on under "Basic Operations for Mode Adjustments".

Notes

- When the optional XDP-US0D and a graphic equalizer are connected, the reproduced sound may become distorted if the audio output signal of the graphic equalizer is boosted too much. In this case, press preset number button 8 while pressing the SEL button. This will reduce the volume, but the distorted sound can be suppressed. To cancel the mode, press these buttons once again (In case the optional XDP-US0D is connected by the optical cable, the volume will not get reduced even if you press preset number button 8 and the SEL button).
- To improve the efficiency of the listening position setting, the volume of the output sound from the rear speakers is lowered automatically.
- When the optional XDP-US0D is connected, the loudness function will not work.

Basic Operations for Mode Adjustments

(Refer to this page when you read the instructions for a select/adjust mode on another page)



- 1 Select a program source (MiniDisc, CD or radio) by pressing .
- 2 Press the **DSP** button for more than one second to enter the DSP edit mode.
- 3 Select a mode by pressing the **DSP** button lightly. The modes change in following order:
Surround menu select → Listening position select → Subwoofer cut-off frequency select
Treble adjust ← Fader adjust
- 4 Press the button to select an item from the mode menu.
- 5 Press the button lightly to enter the adjust mode.
- 6 Press the button to adjust the selected item.
- 7 Press the button lightly to continue with another adjustment.
 Press the **DSP** button for more than one second to cancel the DSP edit mode.

To reset to the original factory-adjusted setting, press the SEL button for more than two seconds.

DSP Function

Selecting the Surround Mode

This unit features ten preset surround modes. You can select your desired surround mode to suit the source audio. These modes can simulate different soundfields so that you can enjoy the sensation of being close to the music source or being at a live concert etc.

Surround Menu

HALL	Concert hall
JAZZ	Jazz club
DISCO	Disco with thick walls
THEATER	Movie theater/cinema
PARK	Big open space
LIVE	Live concert
OPERA	Opera house
CHURCH	Church/chapel with a lot of reverberation
STADIUM	Open-air concert in a stadium
CELLAR	Cellar with a lot of reverberation
DEFEAT	The surround mode will be canceled. (The "DSP" indication will disappear.) In this condition you cannot adjust the effect level.

By pressing the button repeatedly, the surround modes will change as follows:



Operations

Perform steps 1 to 3 to enter the surround menu select mode.
Perform step 4 to select a surround mode.
Perform step 7 to cancel the surround menu select mode.

Adjusting the Effect Level

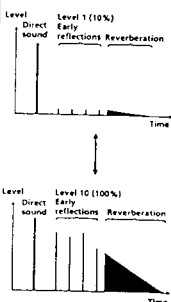
Balance and level of the reflections and of the reverberation of the selected surround mode can be adjusted.

Perform steps 1 to 5 to enter the effect level adjust mode.
Perform step 6 to adjust the effect level.

You can adjust from 0 to 100% at 10% intervals. The higher the percentage, the more resembles the sound a live performance.

Perform step 7 to cancel the effect level adjust mode.
(Perform steps 7 and 4 to continue to adjust the effect level of another surround mode.)

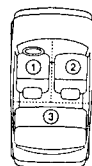
Effect Level Adjustment Guide



DSP Function

Selecting the Listening Position

The time it takes for the sound from the speakers to the listener can be selected. Even in an imperfect listening environment such as inside a car, it is possible to simulate a natural soundfield so that a listener can feel as if he is in the center of the soundfield wherever he sits in the car.



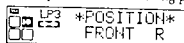
Display window	Center of soundfield
LP1	ALL
LP2	FRONT
LP3	FRONT R
LP4	FRONT L
LP5	REAR

By pressing the button repeatedly, the listening position indication in the display window will change as follows:

ALL(LP1)
↑
FRONT(LP2)
↑
FRONT R(LP3)
↑
FRONT L(LP4)
↑
REAR(LP5)

Operations

Perform steps 1 to 3 to enter the listening position select mode.
Perform step 4 to select a listening position.



Perform step 7 to cancel the listening position select mode.

Setting the listening position more specifically

After selecting the listening position by performing steps 1 to 4, perform step 5 to enter the left/right balance adjust mode.
Perform step 6 to set the center of the soundfield.

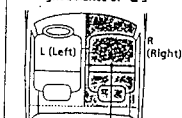
	Center moves toward R (right).
	Center moves toward L (left).

Perform step 5 again to enter the front/rear balance adjust mode.
Perform step 6 to set the center of the soundfield.

	Center moves toward R (rear).
	Center moves toward F (front).

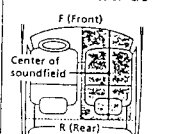
Perform steps 7 to cancel the balance adjust mode.
(Perform steps 7 and 4 to continue to adjust another listening position.)

For example, adjustment of the left/right balance of "LP3"



Center of soundfield

For example, adjustment of the front/rear balance of "LP3"



DSP Function

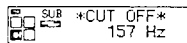
Adjusting the Cut-off Frequency and Volume of the Subwoofer(s)

To match the characteristics of the connected subwoofer(s), you can cut the unwanted high and middle frequency audio signal going into the subwoofer(s). The frequency at which the audio signal is cut off is called the cut-off frequency. By setting the cut-off frequency, the subwoofer(s) will output only low frequency signals so that a clearer sound image can be created.

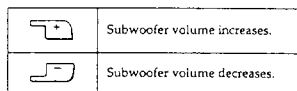
Operations

Perform steps 1 to 3 to enter the cut-off frequency/volume control mode.

Perform step 4 to select the cut-off frequency.



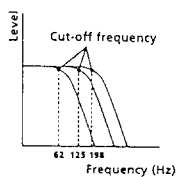
Perform step 5 to enter the volume control mode, and perform step 6 to adjust the volume.



At the lowest volume setting the subwoofer sound will be completely cut out (mute).

Perform step 7 to cancel the cut-off frequency/volume control mode.

(Perform steps 7 and 4 to continue to select another cut-off frequency.)



By pressing the button repeatedly, the cut-off frequencies will change as follows:

62 Hz
↑
78 Hz
↑
99 Hz
↑
125 Hz*
↑
157 Hz
↑
198 Hz

* Factory-set frequency

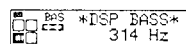
Adjusting the Bass and Treble

When the treble or bass frequency is changed, the original frequency is called the turn-over frequency. By selecting the bass or treble turn-over frequencies, you can control the volume thus matching the acoustic characteristics inside your car.

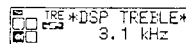
Operations

Perform steps 1 to 3 to enter the bass or treble adjust mode.

Perform step 4 to select the turn-over frequency.



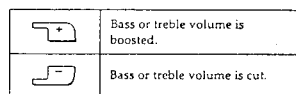
Bass adjust mode



Treble adjust mode

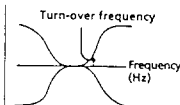
Perform step 5 to enter the volume control mode.

Perform step 6 to control the volume.



Perform step 7 to cancel the bass or treble adjust mode.

(Perform steps 7 and 4 to continue to select another turn-over frequency.)



By pressing the button repeatedly, the turn-over frequencies in the bass adjust mode will change as follows:

198 Hz
↑
250 Hz
↑
314 Hz*
↑
396 Hz

By pressing the button repeatedly, the turn-over frequencies in the treble adjust mode will change as follows:

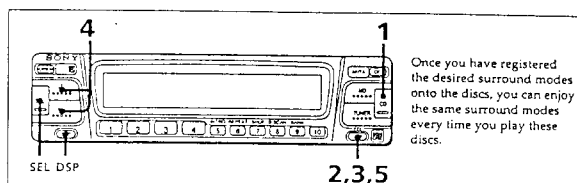
2.0 kHz
↑
3.1 kHz*
↑
4.0 kHz
↑
5.0 kHz

* Factory-set frequency

DSP Function

Registering Surround Modes onto Discs

— DSP Custom File Function (With Optional-CD Changer(s) Connected)



Once you have registered the desired surround modes onto the discs, you can enjoy the same surround modes every time you play these discs.

Before registering the DSP custom file, make sure that you have titled the discs.

- 1 Play any disc.
- 2 Press the LIST button for more than two seconds to enter the title edit mode.

If the disc has no title, "-----" will appear in the display window. Refer to "Displaying the Title of Each Disc" on page 40, and put a title onto the disc.
- 3 Press the LIST button lightly twice to enter the DSP file registering mode.
- 4 Press the button to select the surround mode.
 HALL • JAZZ • DISCO • ... • DEFEAT •
HALL • JAZZ...
 CELLAR • STADIUM • CHURCH • ... •
JAZZ • HALL • DEFEAT...

With one CD changer, you can register surround modes onto a maximum of 110 discs. See page 42 for more details.

Note
This function works only when (a) CD changer(s) with custom file feature is (are) connected.

- 5 Press the LIST button for more than two seconds.

The unit enters the normal CD play mode.

Playing in the DSP Custom File Mode

Press the DSP button while holding down the SEL button during CD play.



"DSP" and "FILE" will appear in the display window. To return to the normal play mode, press again the DSP button while holding down the SEL button.

Changing the registered surround mode

Play the disc whose surround mode you want to change, and repeat from step 2 on page 52 to step 5.

Erasing the registered surround mode

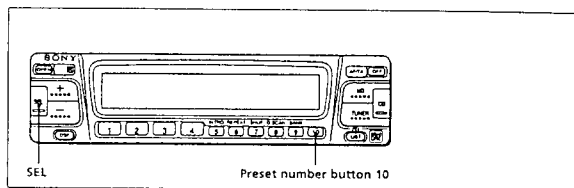
Select the DEFEAT mode in step 4.

When you press the DSP button during CD play in the DSP custom file mode, the surround mode will be canceled. However, if you change the disc, the new disc will be played in the surround mode registered in the DSP custom file.

* If no surround mode is registered on a disc, the "DSP" indication will not appear.

DSP Function

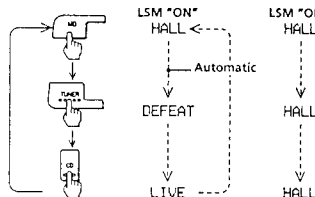
Listening to each Program Source in its Registered Surround mode — LSM (Last Sound Memory) Function



LSM (Last sound memory) function

This function memorizes the last-selected surround mode of each program source. With this function, you can listen to the same source always in the same surround mode even after changing the program source or turning the unit off and on again.

For example, if you listen in following order to a MiniDisc in the "HALL" mode → to the radio in the "DEFEAT" mode → to a CD in the "LIVE" mode and change then to Mini Disc play, the surround mode will automatically change to "HALL". If you change then to radio, the surround mode will change to "DEFEAT".



Even with the LSM function off, it is possible to change the surround mode manually.

Playback with the LSM Function

Press the preset number button 10, while holding down the SEL button.



The "LSM" indication appears.

To cancel the LSM function, press again the preset number button 10 while holding down the SEL button.

Maintenance

Fuse Replacement

If the fuse blows, check the power connection and replace the fuse. If the fuse blows again after replacement, there may be an internal malfunction.

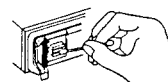
Warning

Use only a fuse with the specified amperage. Use of a higher amperage fuse may cause serious damage.

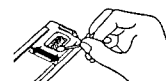
Cleaning the Connectors

The unit may not function properly if the connectors between the unit and the front panel are contaminated with dirt. In order to prevent this, open the front panel by pressing the OPEN button. Then detach the front panel by pulling it towards you while holding down the RELEASE button, and clean the connectors from time to time.

Clean the connectors with a cotton swab as illustrated. Be sure to clean them with a vertical motion. Never clean them horizontally as this could damage the connecting points.



Indash unit



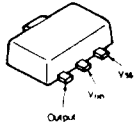
Back of the front panel

When you play a CD in the DSP custom file mode (see page 52), the various surround modes registered on the discs will change automatically even when the LSM function is on.

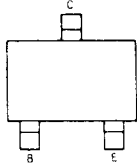
SECTION 2 DIAGRAMS

2-1. SEMICONDUCTOR LEAD LAYOUTS

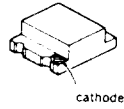
S-8054HN-CB



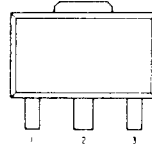
UN2216



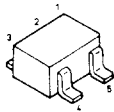
CL-155G/PG-D-TL



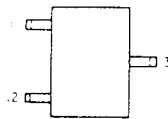
RB110C



**TC4S66F
TC7S66F**

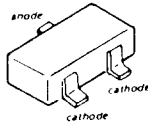


UN5211



1: Base
2: Emitter
3: Collector

DAP202K



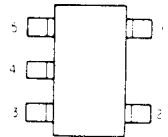
RB411D



**DTC114TK
DTC314TKH04
DTD113EK
UN2111
UN2112
UN2113
UN2211
UN2212
UN2213
UN5113
UN5212
2SA1162-G
2SC1623-L5L6
2SC2712-YG**

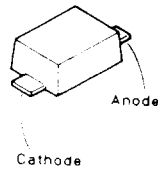


XN1A312-TX

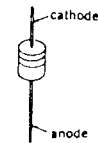


1: Tr1 OUT
2: Tr2 OUT
3: Tr2 IN
4: GND
5: Tr1 IN

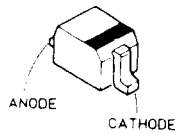
**DTZ5.1B-TT11
MA8091-M
MA8110-L-TX**



RD6.2ESB2



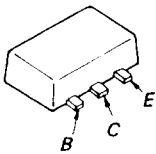
**DTZ5.6B
MA8062-M
1SS318
1SS352
1SS355**



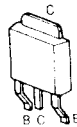
2SA1385-L



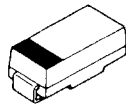
**DTB113ZR
2SB1115A
2SD1622-S
2SD1664-QR
2SD1760F5-R**



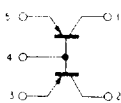
2SB1203FAS



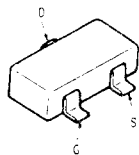
EC10DS2



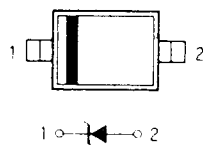
FMY1



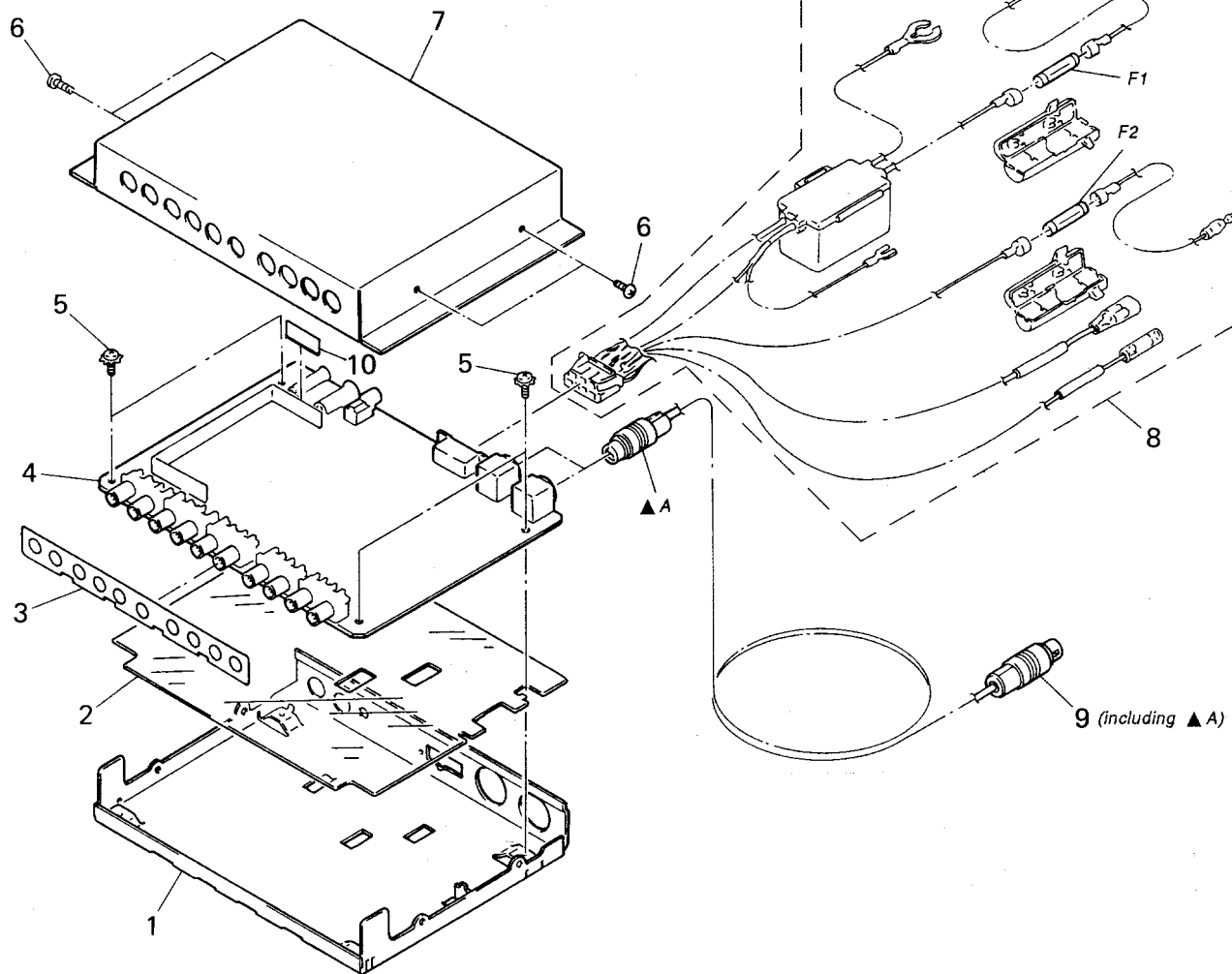
2SK1657-T1B



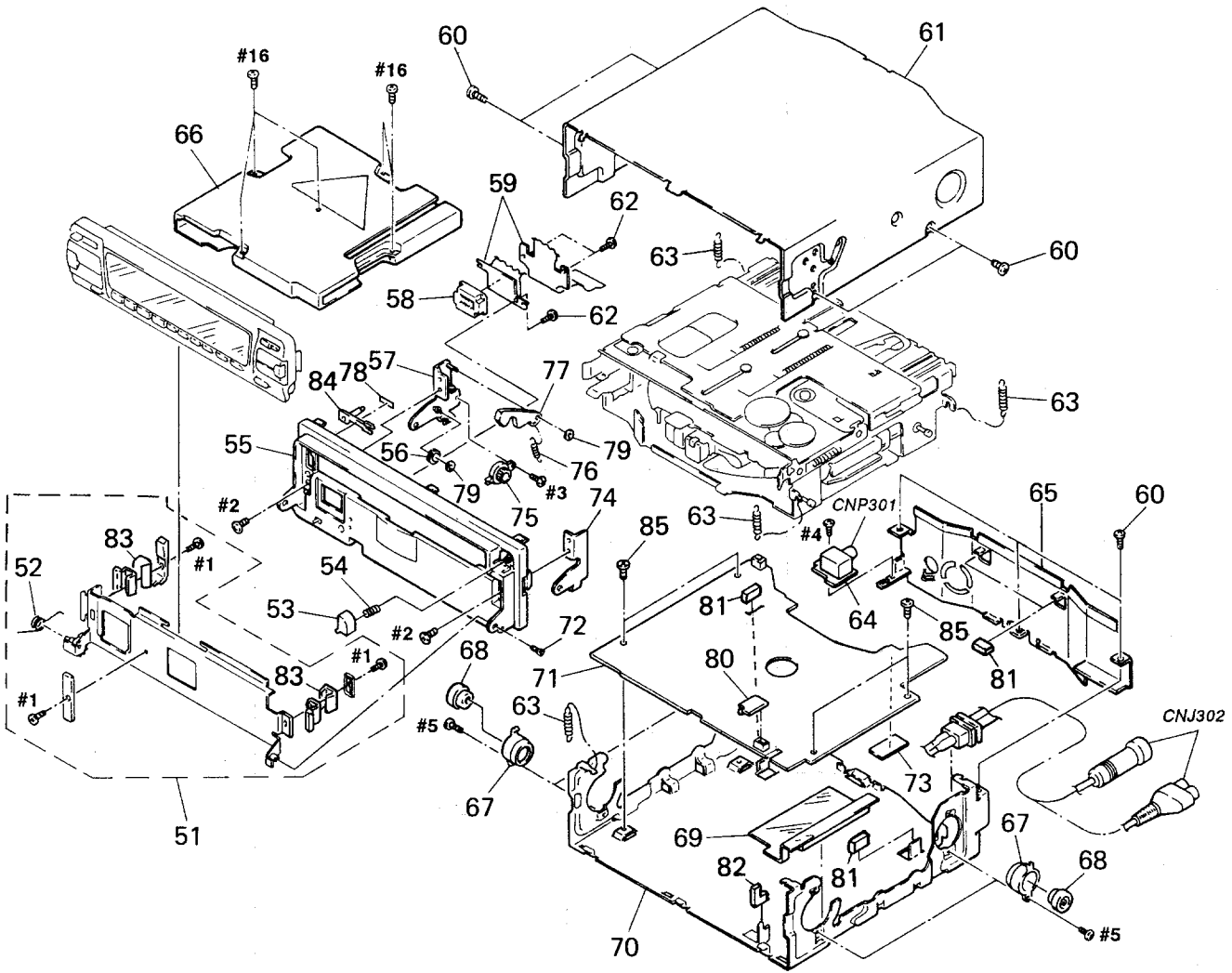
**MA8047-M-TX
MA8160M**



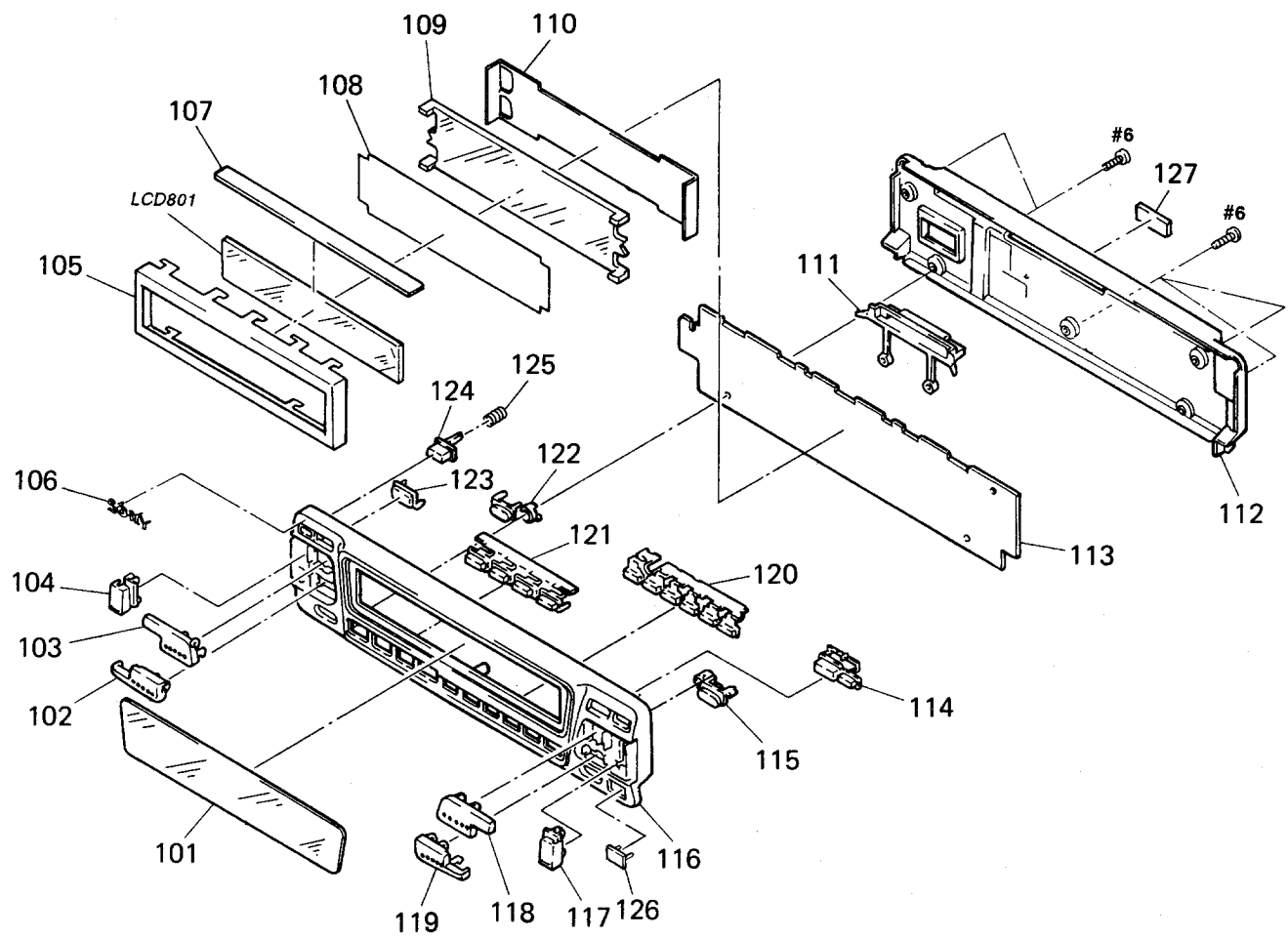
3-1. HIDEAWAY SECTION



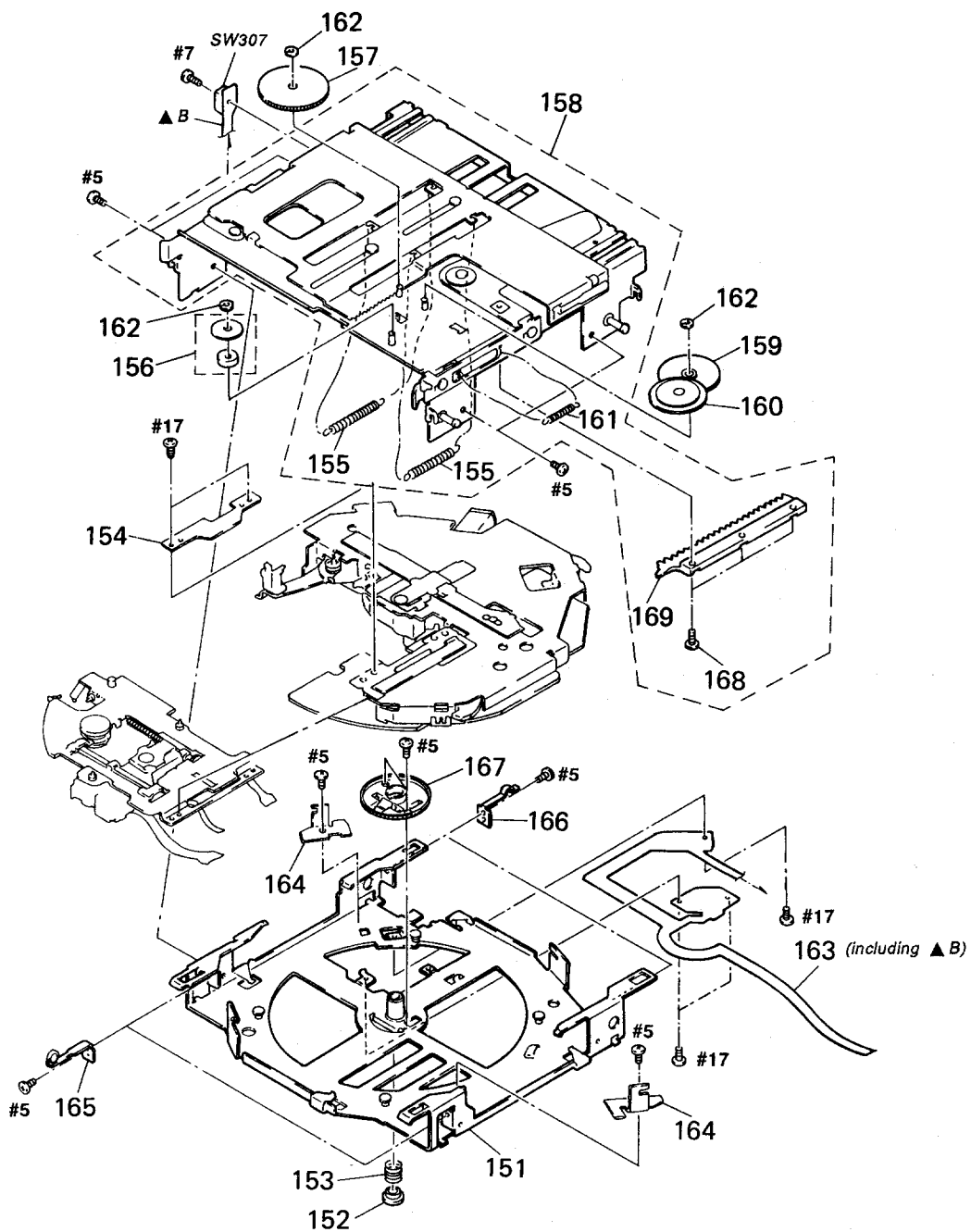
3-2. CABINET, CHASSIS SECTION



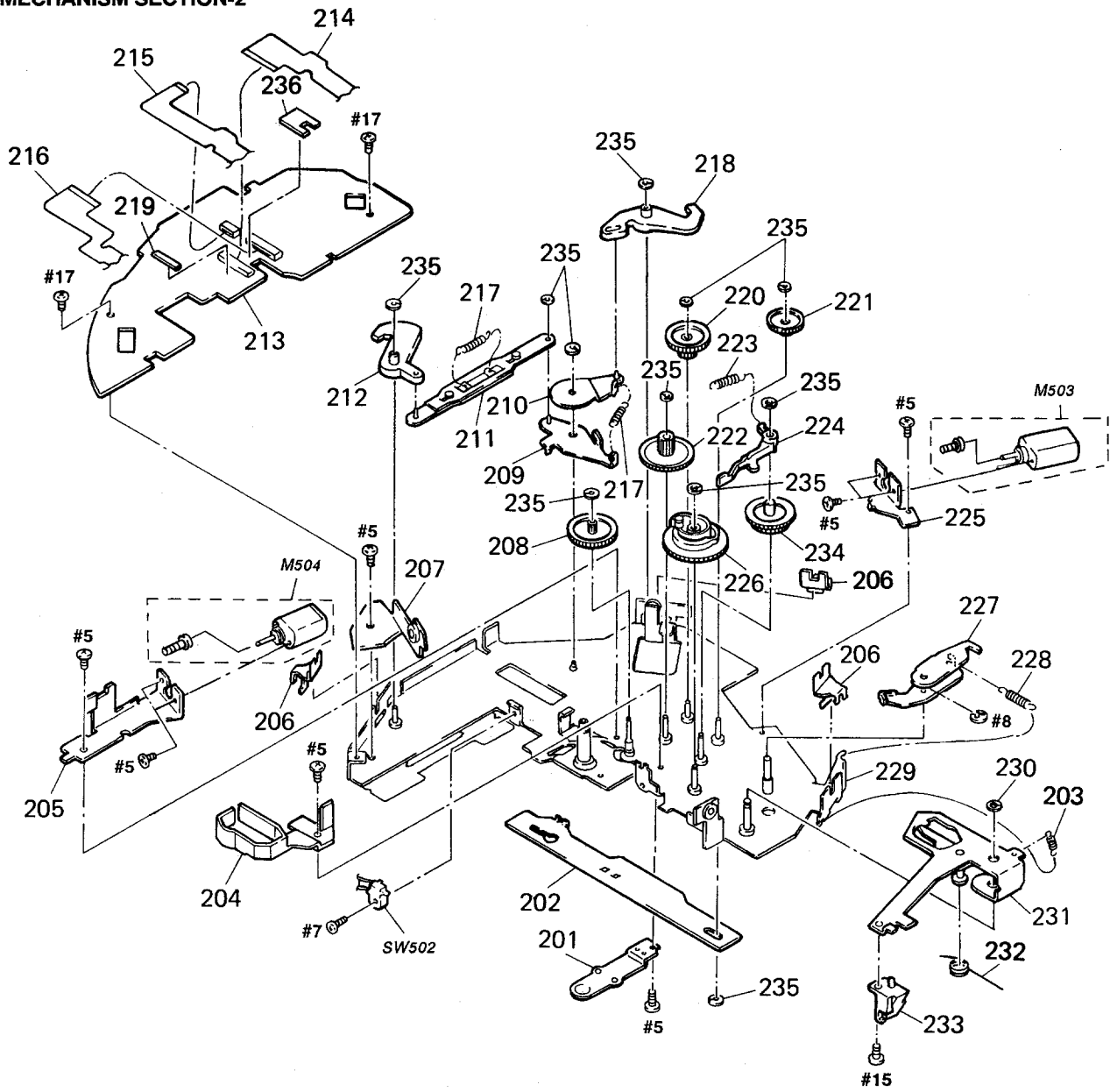
3-3. FRONT PANEL SECTION



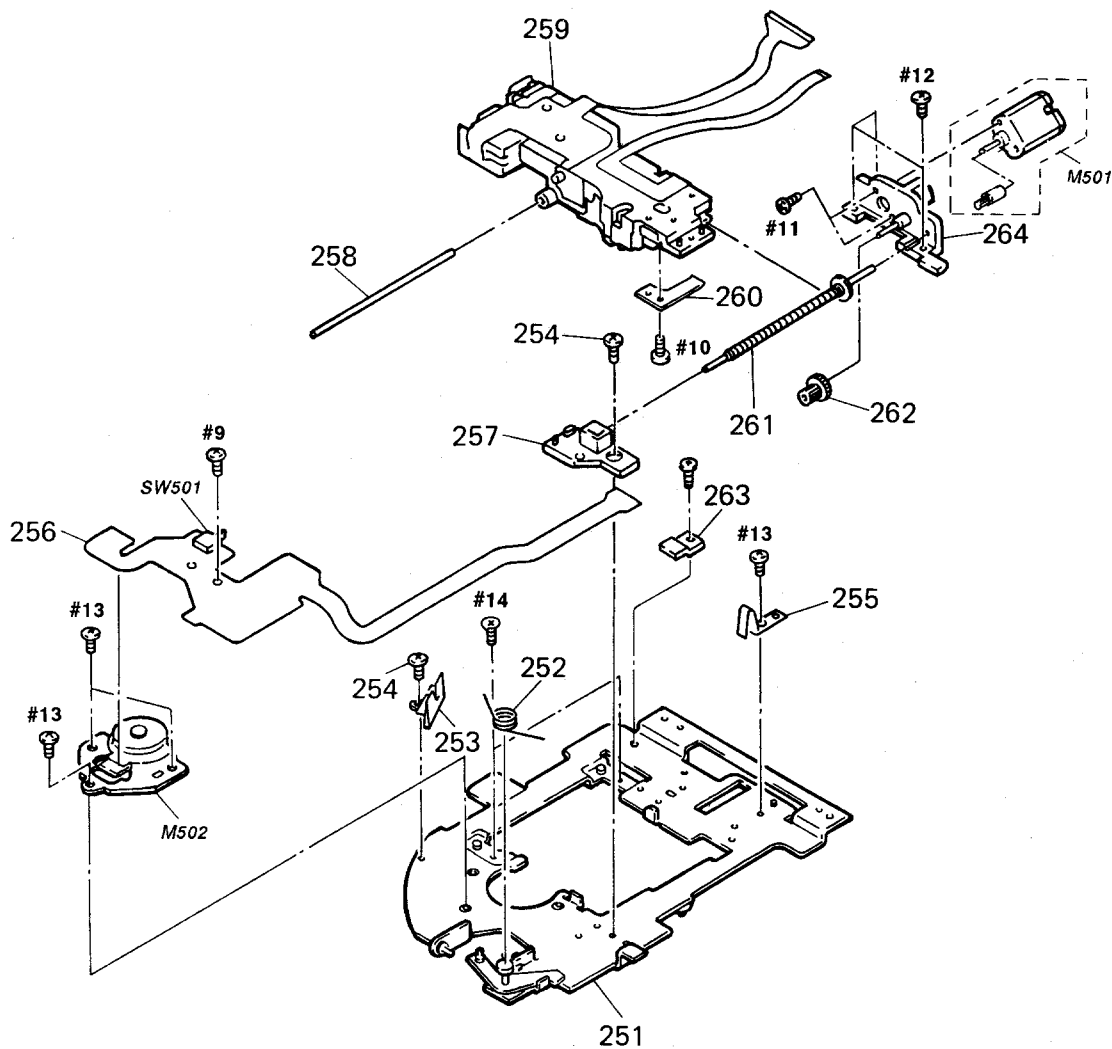
3-4. MECHANISM SECTION-1



3-5. MECHANISM SECTION-2



3-6. MECHANISM SECTION-3



3-7. ROTARY COMMANDER SECTION (RM-X38)

